Final

ENVIRONMENTAL ASSESSMENT for Railroad Disposition

Ellsworth Air Force Base
South Dakota

September 2003

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
SEP 2003		**00-00-2003 to 00-00-2003**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Environmental Assessment for Railroad Disposition	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **28 Civil Engineering Squadron,28 CES/CEVP,2103 Scott Drive,Ellsworth AFB,SD,55706**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

The purpose of the action alternatives would be to dispose of the railroad located on Ellsworth Air Force Base, South Dakota. The railroad on this property is an asset that needs to be kept in good repair if it is going to be retained for possible future use. Because there is no foreseeable Base mission that would require a railroad, Ellsworth Air Force Base is proposing the disposal of the railroad tracks. In addition, as required by the Council for Environmental Quality regulations implementing National Environmental Policy Act (NEPA, CPR 40 Parts 1500-1508), the No Action alternative was also analyzed. Under this alternative, the United States Air Force would not dispose of the railroad.

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**Same as Report (SAR)**	**224**	

Affidavit of Publication

STATE OF SOUTH DAKOTA
County of Pennington ss.

Patricia K. Van Patten, being first duly sworn, upon her oath says: That she is now and was at all times hereinafter mentioned, an employee of the RAPID CITY JOURNAL COMPANY, a corporation, of Rapid City, South Dakota, the owner and publisher of the RAPID CITY JOURNAL, a legal and daily newspaper printed and published in Rapid City, in said County of Pennington, and has full and personal knowledge of all the facts herein stated as follows: that said newspaper is and at all of the times herein mentioned has been a legal and daily newspaper with a bonafide paid circulation of at least Two Hundred copies daily, and has been printed and published in the English language, at and within an office maintained by the owner and publisher thereof, at Rapid City, in said Pennington County, and has been admitted to the United States mail under the second class mailing privilege for at least one year prior to the publication herein mentioned; that the advertisement, a printed copy of which, taken from said RAPID CITY JOURNAL, the paper in which the same was published, is attached to this sheet and made a part of this affidavit, was published in said paper once each week for two successive weeks, the first publication thereof being on the eleventh day of August, 2003, that the fees charged for the publication thereof are Sixty-six Dollars and fifty-six cents.

Aug. 11, 18 L1459352
PUBLIC NOTICE
ENVIRONMENTAL ASSESSMENT
RAILROAD DISPOSITION
Ellsworth Air Force Base, South Dakota

The United States Air Force proposes to remove all or a portion of the railroad on Ellsworth Air Force Base, from its point of origin on the Dakota, Minnesota and Eastern Railroad in Box Elder to its termination on the north end of Ellsworth Air Force Base, including spurs off the main base line.

Ellsworth AFB has drafted an environmental assessment (EA) that describes the environmental impacts of removing all or a portion of the railroad. Five alternatives were examined: first, removing the entire base railroad including the section from the DM&E line to the southern boundary of the base; second, removing only that portion of the railroad on the base, not including the section from the DM&E line to the southern boundary of the base; third, removing only the spurs off of the main base line; fourth, removing the railroad only at road crossings; and fifth, taking no action. The choice was also considered between removing only the tracks, ties, and ballast or also removing the railroad berm and returning the area to its original contours.

If you have any comments on the proposed action or wish to see the complete EA, please contact 2nd Lt. Benjamin Brattebo at the Ellsworth AFB Environmental Office at (605) 385-2680. A copy of the EA will be available at the EAFB Holbrook Library, as well as the Rapid City Public Library. Written comments may be mailed to the EAFB Environmental Office at:

28 CES/CEV
Attn: Public Comments
2103 Scott Dr.
Ellsworth AFB, SD 57706

Comments will be accepted until 25 August 2003.

Patricia K. Van Patten

Subscribed and sworn to before me this 18th day of August, 2003.

KATHY L. GRAFF NOTARY PUBLIC SEAL STATE OF SOUTH DAKOTA

Kathy L. Graff
Notary public.

My Commission Expires
April 29, 2004
My commission expires

STAFF SUMMARY SHEET

	TO	ACTION	SIGNATURE (Surname), GRADE AND DATE		TO	ACTION	SIGNATURE (Surname), GRADE AND DATE
1	28 CES/ CC	Coord	Meyer, GS-13, 20 Aug 03	6	28 BW/ CCA	Log	#361 mkt 8 Sep
2	28 BW/ JA	Coord	[illegible] 03, 25 Aug 03	7	28 BW/ CCE/CCS	Proof	mkt 8 Sep
3	28 MSG/ CCE	Proof	[illegible] 28 Aug #524	8	28 BW/ CV	Coord	Brown 11 Sept
4	28 MSG/ CD	Coord		9	28 BW/ CC	Sign	
5	28 MSG/ CC	Coord	2 Plts coor 8 SEP	10			

SURNAME OF ACTION OFFICER AND GRADE	SYMBOL	PHONE	TYPIST'S INITIALS	SUSPENSE DATE
BRATTEBO, 2LT	CEVP	5-2680	bob	

SUBJECT	DATE
Environmental Assessment for Railroad Disposition	20030818

SUMMARY

1. The Finding of No Significant Impact (FONSI) (Tab 1) associated with the attached Environmental Assessment (EA) (Tab 2) requires the 28 BW/CC signature.

2. The National Environmental Protection Act (NEPA) requires that an EA be accomplished for any project which could have a significant adverse impact on the environment. By signing the FONSI the 28 BW/CC certifies the proposed action has no significant environmental impact, and does not constitute a major federal action requiring an Environmental Impact Statement.

3. The EA outlines a proposal to remove all or a portion of the Ellsworth Air Force Base railroad. The EA also provides the analysis which supports the FONSI. The responsibility identification outlined in both the FONSI and the EA ensures Ellsworth AFB remains compliant with all Air Force, state, and federal regulations.

4. The Environmental Assessment considered the following alternatives:
   a. No Action Alternative: No part of the EAFB railroad would be removed and the area would remain in its current condition.
   b. Remove the entire EAFB railroad from its point of origin on the Dakota, Minnesota, and Eastern Railroad in Box Elder to its termination in the north end of EAFB and two spurs off the main EAFB line. This includes the two sub-alternatives of removing only the tracks, ties, and ballast, or also removing the berm and restoring the area to its original contours.
   c. Remove the EAFB railroad from the Bismarck Gate to its termination in the north including two side spurs. This includes two sub-alternatives, first removing the tracks, ties, and ballast, or second also removing the berm and restoring the area to its original contours.
   d. Remove the EAFB railroad at road crossings only.
   e. Remove only the EAFB railroad spurs located at Base Supply, at Fuels Supply tanks, and at the fuel off-loading area near the Bismarck Gate. This includes two sub-alternatives, first removing the tracks, ties, and ballast, or second also removing the berm and restoring the area to its original contours.

5. A 14 day public comment period was given and no comments were received.

6. RECOMMENDATION. 28 BW/CC sign FONSI at Tab 1.

M H Wheeler

MARK H. WHEELER, P.E.
Chief, Environmental Flight

Tabs
1. FONSI
2. Railroad Disposition Environmental Assessment

ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
AFI	Air Force Instruction
AGL	Above Ground Level
APZ	Accident Potential Zone
AQCR	Air Quality Control Region
BMP	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulation
CO	Carbon Monoxide
CWA	Clean Water Act
CY	Cubic Yard
DM&E	Dakota, Minnesota, and Eastern
EA	Environmental Assessment
EAFB	Ellsworth Air Force Base
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FFA	Federal Facilities Agreement
FONSI	Finding of No Significant Impact
FY	Fiscal Year
HWSA	Hazardous Waste Storage Areas
I-90	Interstate 90
L_{dn}	Day-Night Average Sound Level
MAP	Management Action Plan
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NRHP	National Register of Historic Places
NRCS	Natural Resource Conservation Service
O_3	Ozone
OSHA	Occupational Safety and Health Act
OU	Operable Unit
Pb	Lead
PM_{10}	Particulate Matter Less than 10 Microns in Size
PSD	Prevention of Significant Deterioration
Q-D	Quantity-Distance
RCRA	Resources Conservation and Recovery Act
RQ	Reportable Quantity
SAFO	Secretary of the Air Force Order
SDGFP	South Dakota Department of Game, Fish, and Parks
SHPO	State Historic Preservation Office SIP
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
SPCCP	Spill Prevention, Control, and Countermeasure Plan
SWPPP	Stormwater Pollution Prevention Plan
TCE	trichloroethylene
TSCA	Toxic Substance Control Act
U.S.	United States
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USC	United Sates Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compound
WWII	World War II

FINAL

FINDING OF NO SIGNIFICANT IMPACT/ FINDING OF NO PRACTICABLE ALTERNATIVE ENVIRONMENTAL ASSESSMENT RAILROAD DISPOSITION

1.0 NAME OF PROPOSED ACTION

Railroad Disposition, Ellsworth Air Force Base, South Dakota.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The United States Air Force (USAF) proposes to remove all or part of the railroad line with two spurs that originates south of Ellsworth Air Force Base (EAFB) near the western end of the "Box Elder Passing Track" on the Dakota, Minnesota, and Eastern (DM&E) Railroad Corporation's right-of-way in Box Elder, South Dakota. The 4.9-mile long railway under consideration traverses the Base and ends at the missile ramp located at the north end of the Base. The "main" and "side" tracks have been inactive for over 10 years due, in part, to the expense of repair and upkeep. The purpose of this Environmental Assessment (EA) is to facilitate the planning of railway disposition alternatives. The design phase will be used to resolve any conflicts that arise from alternatives. Two removal options for Alternatives 2, 3, 4, and 5 are to (a) remove rails, ballast, and ties only, or (b) remove rails, ballast, ties, and embankments, where embankments exist.

- Alternative 1 (No Action) – As required by the Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act ([NEPA] Code of Federal Regulations [CFR] 40 Parts 1500-1508), the No Action alternative was also analyzed. Under this alternative, the USAF would not dispose of the railroad.

- Alternative 2A – Removal of all the rails, ties, and ballast for the entire railroad track on EAFB property from the DM&E right-of-way to the missile unloading area;

- Alternative 2B – Removal of all the rails, ties, ballast, and large embankments on the south end of the track, and grading of the low embankments into the borrow pits to restore the original contours on EAFB property from the DM&E right-of-way to the missile unloading area;

- Alternative 3A – Removal of the rails, ties, and ballast of the railroad line and two spurs from the Bismarck Gate to the missile-loading area;

- Alternative 3B – Removal of rails, ties, and ballast, of the railroad line and two spurs and grading of the embankments into the borrow pits to restore the original contours from the Bismarck Gate to the missile-loading area;

- Alternative 4 – Removal of the rails, ties, and ballast at roadway crossings only;

- Alternative 5A – Removal of the rails, ties, and ballast from the sidings at Base Supply (Building 7510), at Fuels Area D Supply tanks, and at the fuel off-loading area near the Bismarck Gate (Fuels Area C); and

- Alternative 5B – Removal of rails, ties, ballast, and grading of the embankments into the borrow pits to restore the original contours of the sidings at Base Supply (Building 7510), at Fuels Area D Supply tanks, and at the fuel off-loading area near the Bismarck Gate (Fuels Area C).

3.0 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

This EA provides an analysis of the potential impacts resulting from the implementation of the alternatives. Ten resource areas were evaluated in detail to identify potential environmental impacts resulting from implementing any of the action alternatives or the No Action alternative. Resource categories discussed in this EA include noise and land use, air quality, water resources, safety and occupational health, hazardous waste and materials, biological resources, cultural resources, geology and soils, socioeconomics, and transportation.

3.1 NOISE AND LAND USE

During the track removal, normal machinery noise would be produced. The proposed railroad disposition alternatives would cross or border several land use areas including Greenway, Open Space, and Outdoor Recreation, where such noise would be more noticeable than in other areas crossed such as Industrial and Community Commercial. Work on the project would be conducted between 6:00 am and 10:00 pm. The railroad disposition is consistent with current and future Base land use plans.

3.2 AIR QUALITY

Temporary air emissions would occur under the action alternatives. However, they would be controlled by common construction practices and oversight and would not result in significant impacts. EAFB is located in an area that is in attainment for all national ambient air quality criteria pollutants, therefore a conformity determination is not required. Emissions of all pollutants from this construction activity contribute very little to the total pollutant load in Air Quality Control Region 205.

3.3 WATER RESOURCES

The Base railway borders the Base lakes and Greenway that lie outside the area that will be affected by the disposition of the railroad. There would be no floodplain impacts for the No Action alternative. Executive Order (EO) 11988 requires installations to follow special procedures for actions involving floodplains. The railroad disposition would have no significant impact on floodplains at EAFB.

3.4 SAFETY AND OCCUPATIONAL HEALTH

The railroad bed has been managed using pesticides and herbicides to control pests and weeds. The potential for chemical exposure during demolition activities related to the historic and current use of pesticides and herbicides was evaluated for this EA. Soil sampling results (Appendix C) have identified hazardous substances near the end of the siding at Base Supply (Building 7510). Soil remediation would be required before performing any work at this location. The inactive fuel off-loading spur just north of the Bismarck Gate (Fuels Area C) in Alternative 5 has underground pipes and valves with asbestos coating. Approximately 2,000 feet of track in Alternatives 2A, 3A, and 4 occur within Base quantity-distance (Q-D) Arcs at the missile unloading area at the northern portion of the railway.

3.5 HAZARDOUS WASTE AND MATERIALS

No building demolition would occur as part of the Proposed Action. However, the railroad bed has been managed using pesticides and herbicides to control pests and weeds. The soils underlying the railroad bed were tested. Contamination found near the end of the spur at Base Supply (Building 7510) would need to be remediated in accordance with EPA regulations prior to performing any work at this location. The results will also be evaluated prior to the use of the railroad bed for any activity.

3.6 BIOLOGICAL RESOURCES

The railroad disposition alternatives are primarily located in areas classified as disturbed. This disturbed habitat is a result of continuous mowing, areas with permanent structures, or fenced enclosures for grazing. Portions of the Greenway include some areas that were seeded with native prairie grasses, but are currently mowed. Other areas that may be affected include land that is not currently mowed or grazed, but appears to have been hayed or mowed in the past. Most of these areas appear to support tall grass that may contain both native and non-native species. No trees will be impacted by removal of the railroad for any of the alternatives. Disturbed habitat that covers the majority of the Base offers very little or no habitat for sensitive species of plants or animals. No federally listed species or critical habitats occur on Base, so no impacts to these resources would occur.

The No Action alternative would not impact wetlands. Alternative 2 with Option B (removal of rails, ballast, ties, and embankments for the complete length of the railroad line and two spurs) will affect about 0.02 of an acre of wetlands south of Interstate 90 (I-90) on the EAFB right-of-way. At this point the railroad is about 18 feet above a small intermittent stream that flows through a culvert. Removal of this part of the embankment and the culvert would eliminate the need for maintenance. EO 11990 requires installations to follow special procedures and Section 404 of the Clean Water Act (CWA) establishes permitting requirements for actions involving wetlands. The railroad disposition alternatives will avoid and minimize wetland impacts to the extent feasible and related impacts will be mitigated.

3.7 CULTURAL RESOURCES

No archeological resources are known to exist on the Base (RTI 1997); therefore this resource was not considered for detailed analysis. A 1994 study examined all undisturbed areas and concluded that there is limited opportunity for the discovery of an intact, significant archaeological site. There are seven significant and eight potentially significant structures located on the Base. No significant or potentially significant buildings would be impacted by the project.

3.8 GEOLOGY AND SOILS

With the exception of Operable Unit (OU)-11, the Basewide OU, the railroad passes through part of an Environmental Restoration Program (ERP) site. Approximately 375 feet runs through OU-9. The Remedial Investigation conducted at OU-9 in 1995 indicated that surface water, sediment, and soils within OU-9 were contaminated with various chemicals. The chemical constituent primarily consisted of petroleum components from flightline operations and storage activities. As a result, if groundwater is intercepted or contaminants are found during excavation work, the contractor would stop excavation and consult with ERP staff concerning any necessary testing or monitoring that may be required. No soil would be disposed of off-Base. Water erosion is a management concern for the steeper areas where there is little or no vegetative cover. These soils are also subject to wind erosion. Standard construction

practices would be implemented in the form of erosion and sediment control during construction, minimization of steep slopes, and early establishment of vegetative cover to minimize erosion.

3.9 SOCIOECONOMICS

The action alternatives analyzed would not result in additional long-term jobs, changes in Base population, or household income. Temporary local economic impacts would occur during the estimated 5- to 8-week construction period. Local economic impacts include the hiring of local firms for hauling and some construction activities, as well as lodging and board for an estimated 5 to 10 personnel who would travel to the Base to work on the project.

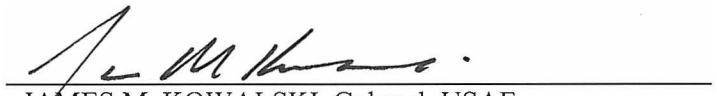
3.10 TRANSPORTATION

Any of the action alternatives would result in increased traffic due to material being hauled to and from the site during the 5- to 8-week construction period. An estimated 1,000 truckloads of material such as scrap iron, wooden ties, and aggregate would be removed from the site over a 2-month period or about 25 truckloads per day for 40 days.

4.0 CONCLUSION

On the basis of the findings of the EA, no significant impact to human health or the natural environment would be expected from implementation of any of the Proposed Action or the alternatives. Therefore, issuance of a Finding of No Significant Impact (FONSI) is warranted, and preparation of an Environmental Impact Statement (EIS), pursuant to NEPA of 1969 (Public Law 91-190), is not required.

Based on the findings of the EA, no significant impact would be anticipated from implementation of any of the action alternatives. Therefore, issuance of a FONSI is warranted, and an EIS is not required prior to implementing the Proposed Action. Pursuant to EOs 11988 and 11990, the authority delegated in Secretary of the Air Force Order (SAFO) 791.1, and taking the above information into account, I find that there is no practicable alternative to wetland impacts associated with the alternatives and that they include all practicable measures to minimize harm to floodplain and wetlands environments. In the event that Alternative 2B proves to be the only viable alternative, a Findings of No Practicable Alternative (FONPA) shall be drafted and signed by the Air Combat Command Civil Engineer.



Date: 19 September 2003

JAMES M. KOWALSKI, Colonel, USAF
Commander, 28th Bomb Wing

COVER SHEET

Environmental Assessment for Railroad Disposition

Responsible Agency: United States Air Force, Air Combat Command, 28th Mission Support Group.

Proposed Action: To remove 4.9 miles of railroad track at Ellsworth Air Force Base, South Dakota.

Written comments and inquiries regarding this document should be directed to:

Mr. Greg Johnson
28 CES/CEVP
2103 Scott Drive
Ellsworth Air Force Base, South Dakota 57706
(605) 385-2692

Designation: Environmental Assessment

Abstract: The purpose of the action alternatives would be to dispose of the railroad located on Ellsworth Air Force Base, South Dakota. The railroad on this property is an asset that needs to be kept in good repair if it is going to be retained for possible future use. Because there is no foreseeable Base mission that would require a railroad, Ellsworth Air Force Base is proposing the disposal of the railroad tracks.

In addition, as required by the Council for Environmental Quality regulations implementing National Environmental Policy Act (NEPA, CFR 40 Parts 1500-1508), the No Action alternative was also analyzed. Under this alternative, the United States Air Force would not dispose of the railroad.

EXECUTIVE SUMMARY

The United States Air Force (USAF) proposes to remove all or part of the railroad line and two spurs that originates south of Ellsworth Air Force Base (EAFB) near the western end of the "Box Elder Passing Track" on the Dakota, Minnesota, and Eastern (DM&E) Railroad Corporation's right-of-way in Box Elder, South Dakota. The 4.9-mile long railway under consideration traverses the Base and ends at the missile ramp located at the north end of the Base. The "main" and "side" track have been inactive for over 10 years due, in part, to the expense of repair and upkeep. The purpose of this Environmental Assessment (EA) is to facilitate the planning of railway disposition alternatives. The design phase will be used to resolve any conflicts that arise from alternatives.

PURPOSE AND NEED FOR THE ACTION

The USAF proposes the disposition of the railroad located on EAFB, South Dakota. The railroad on EAFB property is an asset that needs to be kept in good repair if it is going to be retained for possible future use. Because there is no foreseeable Base mission that would require a railroad, EAFB is proposing the disposal of the railroad tracks (Meyer 2003).

ALTERNATIVES

To create as little environmental disturbance as possible several of the alternatives are being considered. Five alternatives were analyzed in this EA. The first alternative analyzed was the No Action alternative, as required by the Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act ([NEPA] Code of Federal Regulations [CFR] 40 Parts 1500-1508). Under this alternative, the USAF would not dispose the railroad.

- Alternative 1 (No Action) – As required by the CEQ regulations implementing the National Environmental Policy Act (NEPA CFR 40 Parts 1500-1508), the No Action alternative was also analyzed. Under this alternative, the USAF would not dispose of the railroad.

- Alternative 2A – Removal of all the rails, ties, and ballast for the entire railroad track on EAFB property from the DM&E right-of-way to the missile unloading area;

- Alternative 2B – Removal of all the rails, ties, ballast and large embankments on the south end of the track, and grading of the low embankments into the borrow pits to restore the original contours on EAFB property from the DM&E right-of-way to the missile unloading area;

- Alternative 3A– Removal of the rails, ties, and ballast of the railroad line and two spurs from the Bismarck Gate to the missile-loading area;

- Alternative 3B –Removal of rails, ties, ballast, of the railroad line and two spurs and grading of the embankments into the borrow pits to restore the original contours from the Bismarck Gate to the missile-loading area;

- Alternative 4 – Removal of the rails, ties, and ballast at roadway crossings only;

- Alternative 5A – Removal of the rails, ties, and ballast from the sidings at Base Supply (Building 7510), at Fuels Area D Supply tanks, and at the fuel off-loading area near the Bismarck Gate (Fuels Area C); and

- Alternative 5B – Removal of rails, ties, and ballast, and grading of embankments into the borrow pits to restore the original contours of the sidings at Base Supply (Building 7510), at Fuels Area D Supply tanks, and at the fuel off-loading area near the Bismarck Gate (Fuels Area C).

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

This EA provides an analysis of the potential impacts resulting from the implementation of the alternatives. Ten resource areas were evaluated in detail to identify potential environmental impacts resulting from implementing any of the action alternatives or the No Action alternative. Resource categories discussed in this EA include noise and land use, air quality, water resources, safety and occupational health, hazardous waste and materials, biological resources, cultural resources, geology and soils, socioeconomics, and transportation. The purpose of this EA was to facilitate the planning of the railroad disposition alternatives. The design phase will be used to resolve any conflicts that arise from the railroad disposition alternatives.

NOISE AND LAND USE

During the track removal, normal construction machinery noise would be produced. The proposed railroad disposition alternatives cross several land uses including Greenway, Open Space, and Outdoor Recreation where such noise would be more noticeable than in other areas crossed such as Industrial and Community Commercial. Work on the project would be conducted between 6:00 am and 10:00 pm. The railroad disposition is consistent with current and future Base land use plans.

AIR QUALITY

Temporary air emissions would occur under the action alternatives. However, they would be controlled by common construction practices and oversight and would not result in significant impacts. EAFB is located in an area that is in attainment for all national ambient air quality criteria pollutants, therefore a conformity determination is not required. Emissions of all pollutants from this construction activity contribute very little to the total pollutant load in Air Quality Control Region 205.

WATER RESOURCES

The Base lakes and Greenway lie outside the area that will be affected by the disposition of the railroad. There would be no floodplain impacts for the No Action alternative. The action alternatives related to the embankment removal option would also have no effect on the floodplain. Executive Order (EO) 11988 requires installations to follow special procedures for actions involving floodplains. The disposition of the railroad would have no significant impact on the floodplain.

SAFETY AND OCCUPATIONAL HEALTH

The railroad bed has been managed in the past using pesticides and herbicides to control pests and weeds. The potential for chemical exposure during demolition activities related to the historic and current use of pesticides and herbicides was evaluated for this EA. Soil sampling results (Appendix C) have identified hazardous substances near the end of the siding at Base Supply (Building 7510). Soil remediation would be required before performing any work at this location. The inactive fuel off-loading spur just north of the Bismarck Gate (Fuels Area C) has underground pipes and valves with asbestos coating. Approximately 2,000 feet of track in Alternatives 2A, 3A, and 4 occur within Base quantity-distance (Q-D) Arcs at the missile unloading area at the northern portion of the railway.

HAZARDOUS WASTE AND MATERIALS

No building demolition would occur as part of the Proposed Action. However, the railroad bed has been managed using pesticides and herbicides to control pests and weeds. The soils underlying the railroad bed were tested. Contamination found near the end of the spur at Base Supply (Building 7510) would need to be remediated in accordance with EPA regulations prior to performing any work at this location. The results will also be evaluated prior to the use of the railroad bed for any activity.

BIOLOGICAL RESOURCES

The railroad disposition alternatives are primarily located in areas classified as disturbed. This disturbed habitat is a result of continuous mowing, areas with permanent structures, or fenced enclosures for grazing. Portions of the Greenway include some areas that were seeded with native prairie grasses, but are currently mowed. Other areas that may be affected include land that is not currently mowed or grazed, but appears to have been hayed or mowed in the past. Most of these areas appear to support tall grass that may contain both native and non-native species. No trees will be impacted by removal of the railroad for any of the alternatives. Disturbed habitat that covers the majority of the Base offers very little or no habitat for sensitive species of plants or animals. No federally listed species or critical habitats occur on Base, so no impacts to these resources would occur.

The No Action alternative would not impact wetlands. Alternative 2 with Option B (removal of rails, ballast, ties, and embankments for the complete length of the railroad line and two spurs) will affect about 0.02 of an acre of wetlands south of Interstate 90 (I-90) on the EAFB right-of-way. At this point the railroad is about 18 feet above a small intermittent stream that flows through a culvert. Removal of this part of the embankment and the culvert would eliminate the need for maintenance. EO 11990 requires installations to follow special procedures and Section 404 of the Clean Water Act (CWA) establishes permitting requirements for actions involving wetlands. The railroad disposition alternatives will avoid and minimize wetland impacts to the extent feasible and related impacts will be mitigated.

CULTURAL RESOURCES

No archeological resources are known to exist on the Base; therefore this resource was not considered for detailed analysis. A 1994 study examined all undisturbed areas and concluded that there is limited opportunity for the discovery of an intact, significant archaeological site. There are seven significant and eight potentially significant structures located on the Base. No significant or potentially significant buildings would be impacted by the project.

GEOLOGY AND SOILS

With the exception of Operable Unit (OU)-11, the Basewide OU, the railroad passes through part of an Environmental Restoration Program (ERP) site. Approximately 375 feet runs through OU-9. The Remedial Investigation conducted at OU-9 in 1995 indicated that surface water, sediment, and soils within OU-9 were contaminated with various chemicals. The chemical constituent primarily consisted of petroleum components from flightline operations and storage activities. As a result, if groundwater is intercepted or contaminants are found during excavation work, the contractor would stop excavation and consult with ERP staff concerning any necessary testing or monitoring that may be required. No soil would be disposed of off-Base. Water erosion is a management concern for the steeper areas where there is little or no vegetative cover. These soils are also subject to wind erosion. Standard construction

practices would be implemented in the form of erosion and sediment control during construction, minimization of steep slopes, and early establishment of vegetative cover to minimize erosion.

SOCIOECONOMICS

The action alternatives analyzed would not result in additional long-term jobs, changes in Base population, or household income. Temporary local economic impacts would occur during the estimated 5- to 8-week construction period. Local economic impacts include the hiring of local firms for hauling and some construction activities, as well as lodging and board for an estimated 5 to 10 personnel who would travel to the Base to work on the project.

TRANSPORTATION

Any of the action alternatives would result in increased traffic due to material being hauled to and from the site during the 5- to 8-week construction period. An estimated 1,000 truckloads of material such as scrap iron, wooden ties, and aggregate would be removed from the site over a 2-month period or about 25 truckloads per day for 40 days.

TABLE OF CONTENTS

Chapter **Page**

APPENDICES

Appendix

LIST OF TABLES

LIST OF FIGURES

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The United States Air Force (USAF) proposes to remove all or part of the railroad line with two spurs that originates south of Ellsworth Air Force Base (EAFB) near the western end of the "Box Elder Passing Track" on the Dakota, Minnesota, and Eastern (DM&E) Railroad Corporation's right-of-way in Box Elder, South Dakota. The 4.9-mile long railway under consideration traverses the Base and ends at the missile-loading ramp located at the north end of the Base. The "main" and "side" track have been inactive for over 10 years due, in part, to the expense of repair and upkeep. The purpose of this Environmental Assessment (EA) is to facilitate the planning of railway disposition alternatives. The design phase will be used to resolve any conflicts that arise from alternatives.

1.2 BACKGROUND

EAFB is located near Rapid City, South Dakota (**Figure 1**). EAFB was established as Rapid City Army Air Base in January, 1942 and a track serving the Base was completed in March of 1942. The track is 4.9 miles long, including 2.6 miles of sidetrack. The track begins in the southeast quarter of the southeast quarter of Section 19, Township 2 North, Range 9 East and ends at the missile ramp on the north end of the base. In the past, the track has been utilized for transportation of Base supplies, aviation fuel, large pieces of equipment, and missiles. The railroad has not been used since the early 1990s and is need of repair and regular maintenance if it is to be used in the future.

The length of the track can be divided into three parts. About ¼ of the track goes from the Passing Track to the Bismarck Gate through a thin corridor of Base property. In this section the railway passes over two built-up embankments and through a cut as it climbs about 140 feet from where the track begins to a ridge north of the Bismarck Gate. The first embankment, south of Interstate 90 (I-90), is about 15 feet high and 1,000 feet long. The second is about 300 feet north of I-90 and is about 15 feet high and 350 feet long. The track then passes through a cut at about the Bismarck Gate.

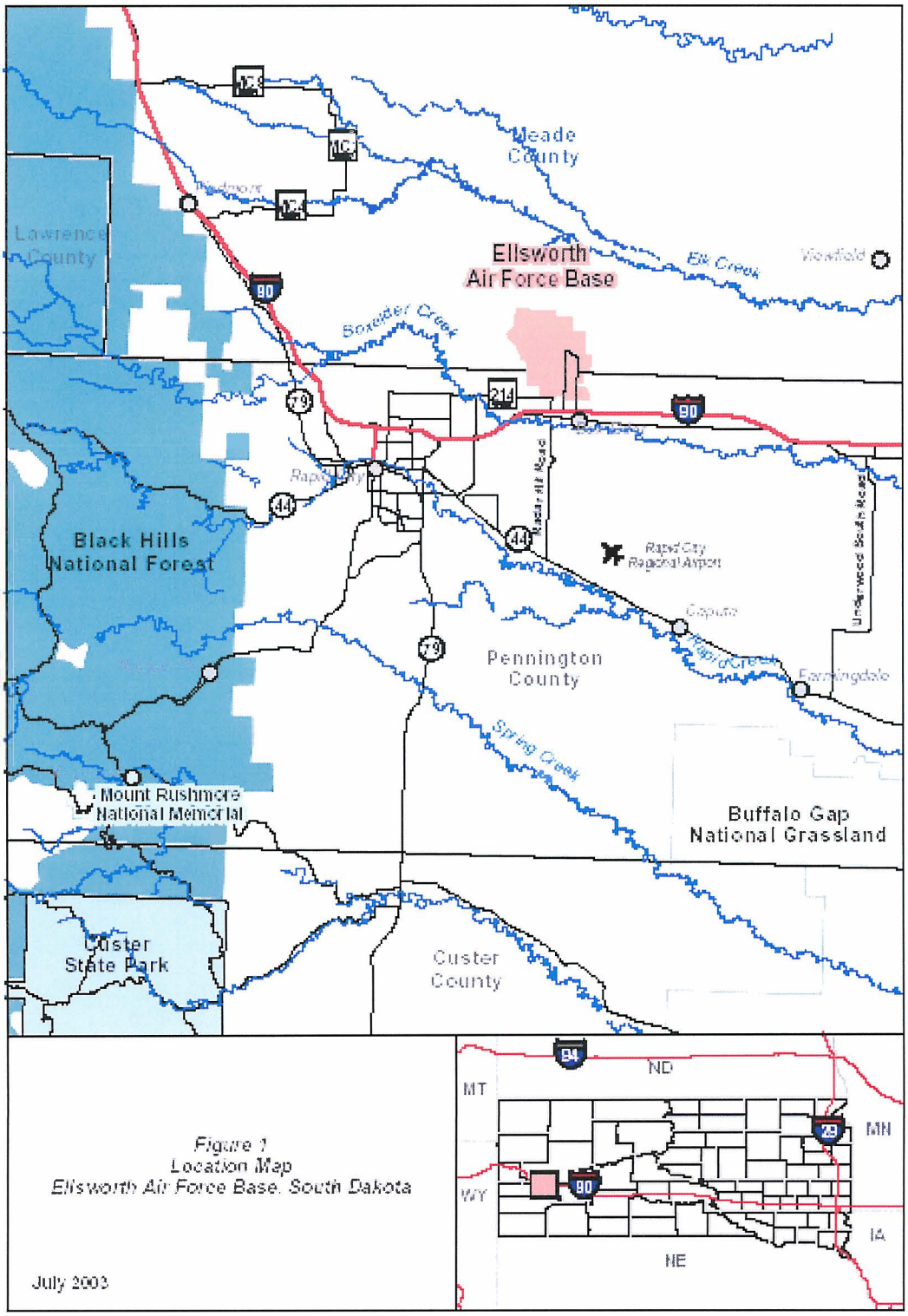
The first embankment in this lower section south of the interstate passes over a small intermittent stream that is part of the alert apron drainage. The stream runs through three concrete culverts under the berm. This area is highly disturbed due to interstate construction activities in the past.

The upper ¾ of the railway goes from the Bismarck Gate through the industrial part of the Base along a ridge for about 1 mile, then onto a relatively flat area at the northern end of the Base. There are no large embankments along this section, only shallow borrow pits. There are 15 railroad crossings including sidetracks.

1.3 PURPOSE AND NEED

The railroad on EAFB property is an asset that needs to be kept in good repair if it is going to be retained for possible future use. Because there is no foreseeable Base mission that would require a railroad, EAFB is proposing the disposal of the railroad tracks.

Figure 1. Location Map: Ellsworth Air Force Base, South Dakota



1.4 REGULATORY COMPLIANCE

This EA was prepared for EAFB, South Dakota, in compliance with all applicable federal statutes, regulations, Executive Orders (EO), and Air Force Instructions (AFI), including but not limited to the following:

- National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [USC] 4321 et seq.);
- Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] 1500–1508);
- Clean Air Act (CAA) (42 USC 7401-7671, as amended)];
- Clean Water Act (CWA) of 1977 (33 USC 1251 et seq.);
- Endangered Species Act (ESA) of 1973 (16 USC 1531-1544, as amended);
- Fish and Wildlife Coordination Act (16 USC 661 et seq.);
- Farmland Protection Policy Act (7 USC 4201);
- National Historic Preservation Act (NHPA) of 1966 (16 USC 470);
- Native American Graves Protection and Repatriation Act (25 USC 3001-3013);
- American Indian Religious Freedom Act of 1978 (42 USC 1996);
- Archaeological Resources Protection Act of 1979 (16 USC 470);
- Protection of Historic and Cultural Properties (36 CFR 800 et seq.);
- EO 11514, Protection and Enhancement of Environment Quality;
- EO 11988, Floodplain Management;
- EO 11990, Protection of Wetlands;
- EO 12898, Environmental Justice;
- EO 13007, Indian Sacred Sites;
- EO 13084, Consultation and Coordination with Indian Tribal Governments;
- EO 11593, Protection and Enhancement of the Cultural Environment; and
- AFI 30-7061, Environmental Impact Analysis Process.

This EA is also in compliance with applicable State of South Dakota regulations and standards.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This chapter describes the alternatives. Eight action alternatives and a No Action alternative are evaluated in this EA. The No Action alternative reflects current or baseline conditions at EAFB.

2.1 PROPOSED ACTION AND ALTERNATIVES

The analyzed action alternatives have the potential to affect the environment. This would be the result of removing part or all of the Base railroad. The No Action alternative involves no changes to the existing environment and represents baseline conditions.

2.2 ALTERNATIVES

To create as little environmental disturbance as possible, a total of five alternatives with two options ([a] removal of the rails, ties, and ballast, or [b] removal of the rails, ties, ballast, and embankments) each for Alternatives 2, 3, and 5 were analyzed in this EA:

- Alternative 1 (No Action) – As required by the Council on Environmental Quality (CEQ) regulations implementing the NEPA CFR 40 Parts 1500-1508, the No Action alternative was also analyzed. Under this alternative, the USAF would not dispose of the railroad.

- Alternative 2A – Removal of all the rails, ties, and ballast for the entire railroad track on EAFB property from the DM&E right-of-way to the missile unloading area;

- Alternative 2B – Removal of all the rails, ties, ballast and large embankments on the south end of the track, and grading of the low embankments into the borrow pits to restore the original contours on EAFB property from the DM&E right-of-way to the missile unloading area;

- Alternative 3A – Removal of the rails, ties, and ballast of the railroad line and two spurs from the Bismarck Gate to the missile-loading area;

- Alternative 3B –Removal of rails, ties, and ballast of the railroad line and two spurs, and grading of the embankments into the borrow pits to restore the original contours from the Bismarck Gate to the missile-loading area;

- Alternative 4 – Removal of the rails, ties, and ballast at roadway crossings only;

- Alternative 5A – Removal of the rails, ties, and ballast from the sidings at Base Supply (Building 7510), at Fuels Area D Supply tanks, and at the fuel off-loading area near the Bismarck Gate (Fuels Area C); and

- Alternative 5B – Removal of rails, ties, and ballast, and grading of the embankments into the borrow pits to restore the original contours of the sidings at Base Supply (Building 7510), at Fuels Area D Supply tanks, and at the fuel off-loading area near the Bismarck Gate (Fuels Area C).

2.3 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

None.

2.4 IMPACT ANALYSIS PROCESS

This EA examines the specific affected environment for each alternative, considers the current condition of the affected environment, and compares those to conditions that might occur under the No Action alternative. It also examines the past, present, and reasonably foreseeable actions of the USAF and other federal, state, and local agencies. The following steps are involved in the preparation of this EA:

- *Conduct Agency Coordination.* The USAF contacted several agencies to review the USAF's proposal and to request their input (Appendix A).

- *Prepare a Draft EA.* The first comprehensive document for public and agency review is the Draft EA. This document examines the environmental impacts of the Proposed Action and the No Action alternative. The Draft EA was published in July 2003.

- *Announce That the Draft EA Has Been Prepared.* The public will be notified about the Draft EA's availability for public review at local repositories.

- *Provide a Public Comment Period.* The goal during this process is to solicit comments concerning the analysis presented in the Draft EA. The public comment period ends in August 2003.

- *Prepare a Final EA.* Following the public comment period, a Final EA is prepared. This document is a revision (if necessary) of the Draft EA, includes consideration of public comments, and provides the decision-maker with a comprehensive review of the Proposed Action and the potential environmental impacts.

- *Issue a Finding of No Significant Impact (FONSI).* The final step in the NEPA process is signature of a FONSI, if the analysis supports this conclusion, or a determination that an Environmental Impact Statement (EIS) would be required for the proposal.

2.5 OTHER REGULATORY AND PERMIT REQUIREMENTS

This EA has been prepared in compliance with NEPA, other federal statutes (such as the CWA, CAA, ESA, EAFB Draft General Plan, and the NHPA), EOs, and other applicable statutes and regulations. The USAF has initiated informal consultation with the United States Fish and Wildlife Service (USFWS), United States Army Corps of Engineers (USACE), South Dakota Department of Game, Fish, and Parks (SDGFP), and other agencies through the Interagency Coordination of the Environmental Planning Process.

Table 2-1 identifies permits and approvals likely required to implement the Proposed Action.

Table 2-1. Permits and Approvals: Ellsworth Air Force Base

Law, Regulation, or Permit	Description	Type of Permit, Waiver, or Approval Required
Section 404 of the CWA	Regulates the discharge of fill materials in "Waters of the U.S.," which include wetlands.	Section 404 permit required for dredging or filling of wetlands.
Floodplains	The USACE analyzes floodplain impacts as part of the Section 404 Permit Process to determine if the Section 404 Permit will cause flooding.	Requirement of special procedures for actions involving floodplains.
General Stormwater Permit for Construction Activities	Regulates stormwater runoff related to construction activities and requires a permit.	General Stormwater Permit for Construction Activities.
Solid Waste Permit	Iron Rails and Wooden Ties	Solid Waste Permit
Spill Prevention, Control, and Countermeasure Plan	Contamination from Spills	Hazardous Waste

2.6 SUMMARY OF IMPACTS

According to the analysis in this EA, implementation of the Proposed Action or alternatives would not result in significant impacts in any resource category. Implementing any of the alternatives would not significantly affect existing conditions at the Base. The following summarizes and highlights the results of the analysis by resource category.

2.6.1 Noise and Land Use

During disposition of the railroad, normal construction machinery noise would be produced. The proposed railroad disposition alternatives cross or are adjacent to several land use areas including Greenway, Open Space, and Outdoor Recreation where such noise would be more noticeable than in other areas crossed such as Industrial. Work on the project would be conducted between 6:00 am and 10:00 pm. The disposition of the railroad is consistent with current and future Base land use plans.

2.6.2 Air Quality

Temporary air emissions would occur under the action alternatives. However, they would be controlled by common construction practices and oversight and would not result in significant impacts. EAFB is located in an area that is in attainment for all national ambient air quality criteria pollutants, therefore a conformity determination is not required. Emissions of all pollutants from this construction activity contribute very little to the total pollutant load in Air Quality Control Region 205.

2.6.3 Water Resources

EO 11988 requires installations to follow special procedures for actions involving floodplains. The Base railroad parallels the so-called "Main Base Drainage" in the southern ⅔ of the Base. The Base lakes and Greenway are adjacent to the railroad at the southern end of the Base, and have desirable visual qualities. The railroad embankment bisects small portions of the floodplain at four places along the Greenway and a small streambed in the northern third of the railway. The floodplain is connected by two culverts that connect where it is bisected by the embankment. The action alternatives considering the removal of the rails, ties, and ballast would not have an effect on the floodplain. Removal of the embankment and re-contouring would have the effect of restoring the floodplain to its original state. There would be no floodplain impacts for the No Action alternative.

2.6.4 Safety and Occupational Health

The potential for chemical exposure during construction activities related to the historic and current use of pesticides and herbicides to manage pests and weeds will be evaluated as part of this EA. Soil sampling results (Appendix C) have identified hazardous substances near the end of the siding at Base Supply (Building 7510). Soil remediation would be required before performing any work at this location. The railroad track at the missile unloading area lies within a quantity-distance (Q-D) Arc.

2.6.5 Hazardous Waste and Materials

No building demolition would occur as part of the Proposed Action. However, the railroad bed has been managed using pesticides and herbicides to control pests and weeds. The soils underlying the railroad bed were tested. Contamination found near the end of the spur at Base Supply (Building 7510) would need to be remediated in accordance with EPA regulations prior to performing any work at this location. Also, sampling was necessary to confirm that it will be safe to use the railroad bed for other purposes such as a running trail. This is addressed as part of this EA and will be completed prior to the use/removal of the railroad bed. The inactive fuel off-loading spur at Fuels Area C just north of the Bismarck Gate has underground pipes and valves with asbestos coating.

2.6.6 Biological Resources

The railroad disposition area can be classified as disturbed. This disturbed habitat is a result of continuous mowing, areas with permanent structures, or fenced enclosures for grazing. Portions of the Greenway include some areas that were seeded with native prairie grasses, but are currently mowed. Other areas that may be affected include land that is not currently mowed or grazed, but appears to have been hayed or mowed in the past. Most of these areas appear to support tall grass that may contain both native and non-native species. There are no trees along the railroad right of way except for brush in a ditch that runs through a large culvert under the railroad embankment about 150 yards from where the railroad begins as a spur of the DM&E. Impacts to trees would be avoided to the extent possible (Peabody and Williams 1994, Grazing Map, Grounds Maintenance Map, and a review of aerial photography 1993 and 2000). This disturbed habitat that covers the majority of the Base offers very little or no habitat for sensitive species of plants or animals. No federally listed species or critical habitat occur on Base, so no impacts to these resources would occur.

The No Action alternative and alternatives with the option to leave the railroad embankment will not impact wetlands. The embankment removal option will affect a small portion of a wetland area where the alert apron drainage flows through two culverts on the railroad embankment south of I-90. EO 11990 requires installations to follow special procedures and Section 404 of the CWA establishes permitting

requirements for actions involving wetlands. The railroad disposition alternatives will avoid and minimize impacts to the small wetland to the extent feasible.

2.6.7 Cultural Resources

No archeological resources are known to exist on the Base (RTI 1997); therefore this resource was not considered for detailed analysis. A 1994 study examined all undisturbed areas and concluded that there is limited opportunity for the discovery of an intact, significant archaeological site. There are seven significant and eight potentially significant structures located on the Base. No significant or potentially significant building would be impacted by the project.

2.6.8 Geology and Soils

With the exception of Operable Unit (OU)-11, the Basewide OU, the railroad passes through part of an Environmental Restoration Program (ERP) site. Approximately 375 feet runs through OU-9. The Remedial Investigation conducted at OU-9 in 1995 indicated that surface water, sediment, and soils within OU-9 were contaminated with various chemicals. The chemical constituent primarily consisted of petroleum components from flightline operations and storage activities. As a result, if groundwater is intercepted or contaminants are found during excavation work, the contractor would stop excavation and consult with ERP staff concerning any necessary testing or monitoring that may be required. No soil would be disposed of off-Base.

Water erosion is a management concern for the steeper areas where there is little or no vegetative cover. These soils are also subject to wind erosion. Standard construction practices would be implemented in the form of erosion and sediment control during demolition, minimization of steep slopes, and early establishment of vegetative cover to minimize erosion.

2.6.9 Socioeconomics

The action alternatives analyzed would not result in additional long-term jobs, changes in Base population, or household income. Temporary local economic impacts would occur during the estimated 5- to 8-week construction period. Local economic impacts include the hiring of local firms for hauling and some construction activities, as well as lodging and board for an estimated 5 to 10 personnel who would travel to the Base to work on the project.

2.6.10 Transportation

Any of the action alternatives would result in increased traffic due to material being hauled to and from the site during the 5- to 8-week construction period. An estimated 1,000 truckloads of material such as scrap iron, wooden ties, and aggregate would be removed from the site over a 2-month period or about 25 truckloads per day for 40 days.

3.0 AFFECTED ENVIRONMENT

3.1 ANALYSIS APPROACH

The NEPA requires focused analysis of the areas and resources potentially affected by an action or alternative. It also indicates that an EA should consider, but not analyze in detail, those areas or resources not potentially affected by the proposal. Therefore, an EA should not be encyclopedic; rather, it should be brief and focused. The NEPA also requires a comparative analysis that allows decision-makers and the public to differentiate among the alternatives. Combined, the affected areas and affected resources defined through analysis comprise the affected environment for each of the alternatives.

Evaluation of the Proposed Action reveals five impact "drivers" or action elements that could affect the environment: construction activities associated with the railroad disposition alternatives, disposal of scrap iron, disposal of the wooden ties, disposal of the ballast, and removal and disposal of the embankment. When these drivers are compared with the baseline conditions and the alternatives, the affected area and resources impacted by each can be determined. The affected areas for all alternatives include EAFB and land uses adjacent to the Base. The affected areas provide the focus for analysis. For some resources, such as air quality, the Base and Base environments are examined together as one affected area. For other resources, such as wetlands, only the Base is considered since it represents the single location where an element of the Proposed Action could affect the resource.

Within the defined affected environment, detailed and current data on conditions were collected by:

- Reviewing previous studies, such as technical publication, agency databases, management plans, and other NEPA documents; and

- Gathering data from agencies and others with information on specific resources, such as the USFWS, USACE, Natural Resource Conservation Service (NRCS), and the SDGFP.

Table 3-1 lists the affected resources considered in this EA. Further detailed analysis of some resource categories has been limited in this EA, because they would not be affected by the Proposed Action or other action alternatives. The topics that did not warrant further detailed discussion include archaeological and historic resources and environmental justice.

3.1.1 Air Installation Compatible Use Zone

EAFB aircraft operations occur in airspace directly overlying and surrounding the airfield. This airspace extends from the airfield surface up to and including 5,800 feet mean sea level (MSL), or approximately 2,500 feet above ground level (AGL) within a 4.7-nautical mile (5.4-statute mile) radius of the airfield. Under the control of the EAFB air traffic control tower for arriving and departing aircraft operations, this airfield airspace supports 4,281 sorties (1,937 B-1 and 2,344 other aircraft annually).

Although about 5,000 feet of railroad pass through the clear zone and accident potential zones and in areas where the noise levels range from 65 to 80 Day-Night Average Sound Level (L_{dn}), the Air Installation Compatible Use Zone was eliminated from further analysis because the railroad is being removed from this zone and removal will be of short duration.

Table 3-1. Resources and Issues Considered in the Environmental Impact Process: Ellsworth Air Force Base

Resource	Location in EA
Noise and Land Use	Section 3.2 – Land Use
Air Quality	Section 3.4 – Physical Resources
Water Resources	Section 3.4 – Physical Resources
Safety and Occupational Health	Section 3.4 – Physical Resources
Hazardous Materials and Waste	Section 3.4 – Physical Resources
Biological Resources	Section 3.5 – Natural Resources
Cultural Resources	Section 3.4 – Physical Resources
Geology and Soils	Section 3.4 – Physical Resources
Socioeconomics	Section 3.3 – Human Resources
Transportation	Section 3.6 – Other
Airfield Operations and Safety	Eliminated from Further Study
Environmental Justice	Eliminated from Further Study

Source: EAFB 2003.

3.1.2 Environmental Justice

Environmental Justice concerns the disproportionate effect of a federal action on low-income or minority populations. The existence of disproportionately high and adverse impacts depends on the nature and magnitude of the effects identified for each of the individual resources. Since no adverse effects would occur because of the Proposed Action, neither minority nor low-income groups would be affected disproportionately. Therefore, Environmental Justice was also eliminated from further analysis.

3.2 NOISE AND LAND USE

3.2.1 Noise

EAFB typically employs a quiet-hours program in which aircraft operations (certain takeoff and landing patterns as well as engine run-ups) are avoided during the "environmental night," after 10:00 pm and before 7:00 am every day of the week. At the Base, noise exposure from airfield operations typically occurs beneath main approach and departure corridors along the runway and in areas immediately adjacent to parking ramps and aircraft staging area. During removal of the track, machinery noise would be produced. The affected environment includes the portions of the Base in the vicinity of the Proposed Action alternatives.

3.2.2 Land Use

EAFB extends across the county line between Pennington and Meade counties. It is composed of approximately 5,411 acres situated on a contiguous piece of land owned entirely by the federal government. The Base land uses crossed by the various action alternatives are identified in **Figure 2.** Land uses adjacent or crossed by the various alternatives include Greenway, Open Space, Outdoor Recreation, and Industrial. The approximate length of each generalized use that each of the action alternative crosses is presented in **Table 3-2.**

Table 3-2. Land Uses Crossed by the Action Alternatives: Ellsworth Air Force Base

Alternative	Land Uses Crossed (acres)				
	Unaccompanied Housing	Open Space[1]	Outdoor Recreation	Industrial	Community Commercial
Alternative 1 (No Action)	0	0	0	0	0
Alternatives 2A and 2B (remove all)	0	15.2	0.40	9.63	0
Alternatives 3A and 3B (removal from Bismarck Gate to Missile loading area)	0	15.2	0.40	9.63	0
Alternative 4	0	0	0	1.95	0
Alternatives 5A and 5B	0	0	0	0	0

Note: (1) "Open Space" includes areas where railroad is adjacent to Greenway but isn't necessarily crossing.

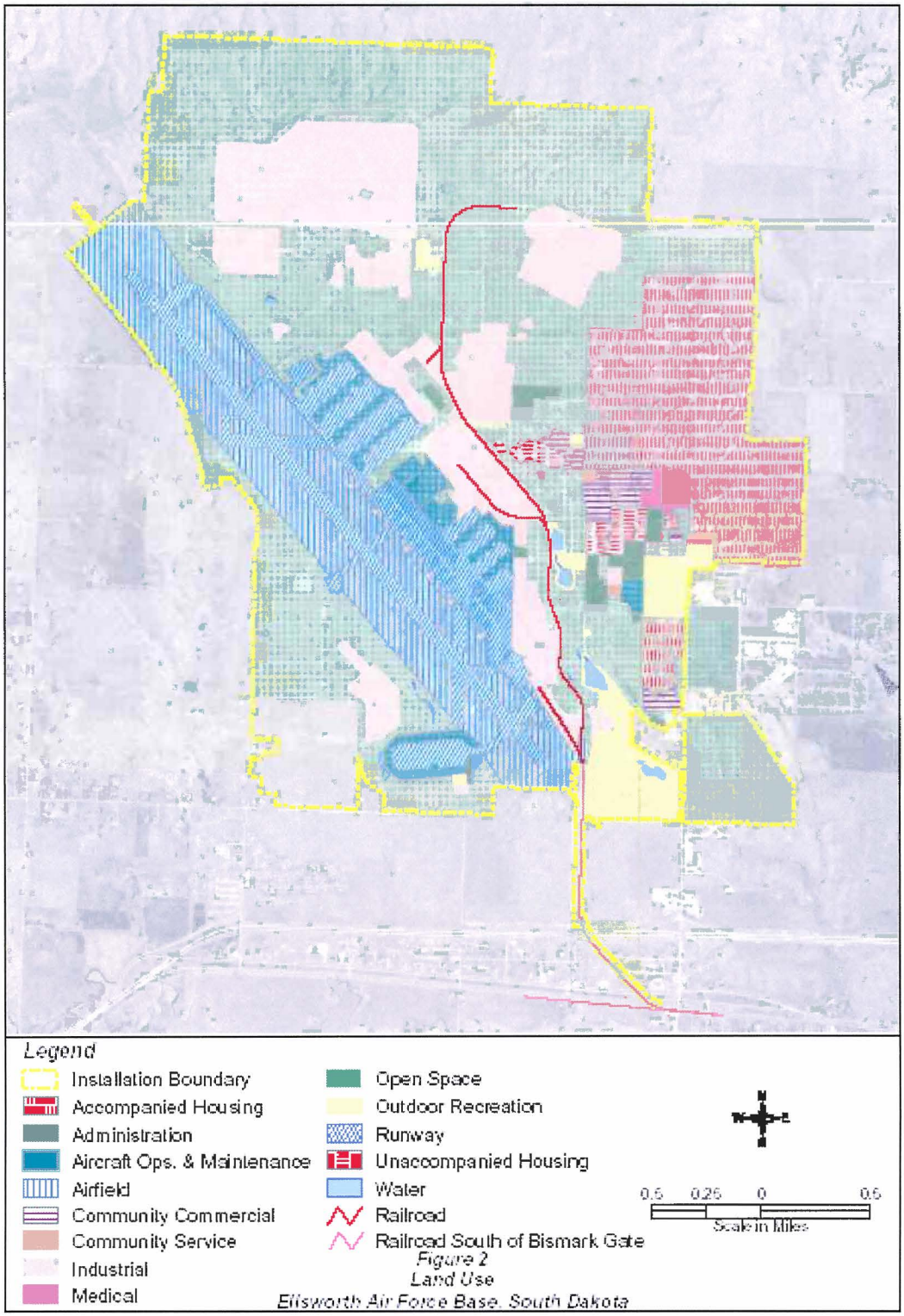
3.3 HUMAN RESOURCES

Human resources evaluated in this EA include the analysis of socioeconomics. Socioeconomics comprise the basic attributes of population and economic activity within a particular area or region of influence and typically encompasses population, employment and income, and industrial/commercial growth. To describe local baseline conditions, socioeconomic data provided in this section consist primarily of county data.

The EAFB region of influence includes Rapid City and Pennington and Meade Counties. Population within the region of influence experienced an average growth rate of 8.9 percent between 1990 and 2000. The total work force for EAFB is 4,212 individuals, including 3,016 active duty enlisted, 404 officers and 609 civilian employees (EAFB 2003).

As of December 2002, approximately 59,850 employed and 1,910 unemployed individuals resided within the region of influence (based on annual average), an unemployment rate of 3.1 percent. The unemployment rate has increased by 1 percent over the past year (EAFB 2003). Average per capita income is $25,088 for Pennington County and $25,614 for Meade County (EAFB 2003). Employment in the region of influence is currently dominated by services (26.7 percent), retail trade (18.2 percent) public administration (17.7 percent), and manufacturing (12.7 percent). EAFB is one of the largest employers, providing approximately 4,212 jobs.

Figure 2. Land Use: Ellsworth Air Force Base, South Dakota



3.4 PHYSICAL RESOURCES

3.4.1 Air Quality

Air quality in a given location is described by the concentration of various pollutants in the atmosphere. The significance of the pollutant concentration is determined by comparing it to the federal and state ambient air quality standards. The CAA and its subsequent amendments established the National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: Ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 microns in size (PM_{10}), and lead (Pb). These standards represent the maximum allowable atmospheric concentrations that may occur while ensuring protection of public health and welfare, with a reasonable margin of safety. South Dakota adopted the NAAQS. Based on measured ambient criteria pollutant data, the U.S. Environmental Protection Agency (USEPA) designates all areas of the United States (U.S.) as having air quality better than (attainment) or worse than (nonattainment) the NAAQS. An area that is currently in attainment but was formerly a nonattainment area is termed a maintenance area. An area is often designated as unclassified when there is insufficient ambient criteria pollutant data for the USEPA to form a basis for attainment status. Unclassified areas are typically rural or remote, with few sources of air pollution.

The CAA requires each state to develop a State Implementation Plan (SIP), which is its primary mechanism for ensuring that the NAAQS are achieved and/or maintained within that state. According to plans outlined in the SIP, designated state and local agencies implement regulations to control sources of criteria pollutants. The CAA provides that federal actions in nonattainment and maintenance areas do not hinder future attainment with the NAAQS and conform with the applicable SIP. There are no specific requirements for federal actions in unclassified or attainment areas. However, all federal actions must comply with all state and local regulations.

The CAA also establishes a national goal of preventing degradation or impairment in any federally designated Class I Area. As part of the Prevention of Significant Deterioration (PSD) program, mandatory Class I status was assigned by Congress to certain types of parks and wilderness areas. In Class I Areas, visibility impairment is defined as a reduction in visual ranges and atmospheric discoloration. Stationary sources, such as industrial complexes, are sometimes an issue for visibility within a Class I PSD Area. Mobile sources, including aircraft and construction equipment, are generally exempt from review under this regulation.

Federal regulations have defined Air Quality Control Regions (AQCRs), originally designated according to population and closely approximating air basins. Effects on air quality are typically confined to the air basins in which the emissions occur, so these emissions are compared to AQCR emission inventory as well as individual Air Force Base (AFB) inventories.

EAFB is located within the Black Hills-Rapid City Intrastate AQCR 205, which is in attainment for all criteria pollutants. An air quality conformity determination is not required because EAFB is in attainment with all National Air Quality Standards. Particulate matter emissions from EAFB do not contribute to Rapid City's particulate dust problem (i.e., windblown dust) since the Base is downgradient from Rapid City. Wind-related exceedances for PM_{10} have not been considered violations by the USEPA since they are due to natural events. Baseline emissions at EAFB represent less than 1 percent of the total CO, volatile organic compounds (VOCs), SO_2, and PM_{10} emissions, and about 2 percent of the oxides of nitrogen emissions for AQCR 205 (**Table 3-3**). Actual emissions are presented in **Table 3-4**.

Table 3-3. Baseline Emissions: Ellsworth Air Force Base

Emissions	Pollutants (tons/year)				
	CO	VOCs	NO_x	SO_2	PM_{10}
Total Base Emissions[1]	70.9	10.7	269.0	6.4	14.5
AQCR 205 Emissions[1]	94,432	14,654	15,481	4,989	29,172

Source: EAFB 2003.
Note: (1) USAF 2000c.

Table 3-4. Current Actual Emissions Inventory, April 2001 to April 2002: Ellsworth Air Force Base

Pollutant	Actual Emission (tons/year)
Carbon Monoxide (CO)	11.1
Lead (Pb)	0
Oxides of Nitrogen (NO_x)	21.4
Particulate Matter <10 Microns (PM_{10})	2.2
Sulfur Oxides (SO_x)	0.5
Volatile Organic Compounds (VOCs)	1.8

Source: EAFB 2003.

A wind rose for the Rapid City area shows that stronger winds are typically from the northwest. Winds also come from the southeast with some frequency, but are typically weaker.

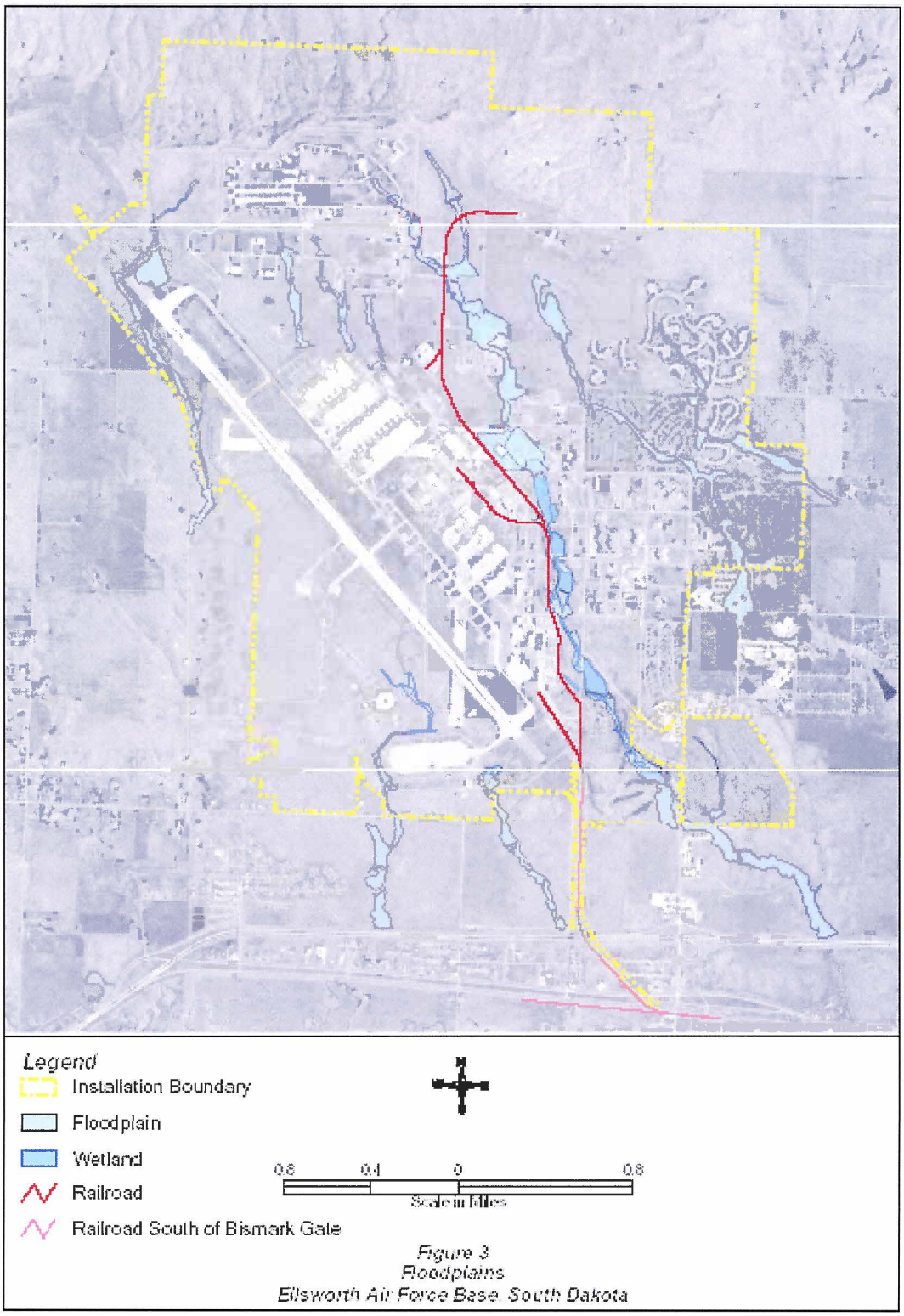
3.4.2 Water Resources

3.4.2.1 Base Lakes, Wetlands, and Watersheds

There are four man-made lakes that are linked by drainageways on EAFB (**Figure 3**). These lakes support outdoor recreation and wetland habitat. Future planning initiatives that could affect lakes, rivers, or streams are contingent upon recommendations of the USACE Drainage Study, September 1996.

Protection of EAFB's lakes, wetlands, and watersheds is primarily the responsibility of the Water Quality and Natural Resources Program Managers. In accordance with AFI 32-7064, non-point source pollution in stormwater (i.e., sediment, nutrients, pesticides, oils and greases, debris, etc.) must be minimized using Best Management Practices (BMP) established by EAFB. The Base is responsible for ensuring that BMPs are consistent with South Dakota's non-point source pollution management program as required by Section 319 of the CWA. EAFB has best management practices in place to minimize non-point source pollution of stormwater as well as a Stormwater Pollution Prevention Plan (SWPPP) and Spill Prevention, Control and Countermeasures Plan (SPCCP). The SWPPP, SPCCP, and best management practices are reviewed annually by the Water Quality Program Manager and revised as needed. The SWPPP and SPCCP are on file in the Environmental Flight (USAF 2001).

Figure 3. Floodplains: Ellsworth Air Force Base, South Dakota



3.4.2.2 Floodplains

Flooding of the Box Elder Creek floodplain, though located off-Base, has severe impacts on the community of Box Elder and EAFB. A series of flood mitigation studies, including the *Ellsworth Air Force Base Joint Land Use Study* (EAFB 1995), suggest mitigation techniques intended to preclude development in the flood-prone areas. The Base floodplain study (EAFB 1996b) has been completed, assessing safety of existing base dams and determining Base drainage patterns and potential impacts to Box Elder in the event of a dam failure on Base. The drainage study includes floodplain surveys and mapping, and recommends possible establishment of drainage basins on Base to capture runoff and mitigate flood activity (EAFB 1996b). This study is also to be used to determine whether additional wetlands will be created on Base, if Base dams will be retained, and if the Base lakes will be dredged. A separate document, *Floodplain Optimization Study, EAFB, South Dakota, October 1996, USACE/Omaha District* (EAFB 1996c) has also been completed and contains recommendations for optimizing EAFB's floodplains. Current floodplain and surface water features in the vicinity of the action alternatives are shown in Figure 3.

The northern floodplain limit of Box Elder Creek is approximately 50 feet beyond the southern boundary of EAFB. One hundred sixty-two acres of developed land in Box Elder lie within the Box Elder Creek Valley Floodplain. The creek is severely prone to flooding from snowmelt and rainfall. Despite this hazard, development pressures are intense due to the level topography of the valley.

A series of flood mitigation studies, including the June 1995 *Ellsworth Air Force Base Joint Land Use Study* (EAFB 1995), suggest mitigation techniques intended to preclude development in the flood-prone areas. Recommendations of this study include voluntary relocation of the developed areas within Box Elder, which currently are located within the Box Elder Creek floodplain and within Accident Potential Zone I (APZ I), installation of a Flood Alert Warning System, and further study of Box Elder Creek tributaries. The danger of flooding from Box Elder Creek and substantial development within APZ I have been the impetus to establishing developmental controls for those portions of Box Elder. In addition, a drainage area study recommends the establishment of drainage basins on EAFB to capture runoff and mitigate flood activity (USAF 2002b).

3.4.3 Safety and Occupational Health

The potential for chemical exposure during removal activities related to the use of pesticides and herbicides to manage pests and weeds has been evaluated. Soil sampling results (Appendix C) have identified hazardous substances near the end of the siding at Base Supply (Building 7510). Soil remediation would be required before performing any work at this location.

Approximately 1,700 feet of the northern part of the railroad track at the missile loading area is located within the Q-D arcs

Potential impacts related to ERP sites are discussed under the "Geology and Soils" section.

3.4.4 Hazardous Materials/Waste

Hazardous materials are identified and regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Occupational Safety and Health Act (OSHA); and Emergency Planning and Community Right-to-Know Act. Hazardous materials have been defined in AFI 32-7086 Hazardous Material Management, to include any substance with special characteristics that could harm people, plants, or animals when released.

Hazardous waste is defined in the Resource Conservation and Recovery Act (RCRA) as any solid, liquid, contained gaseous or semisolid waste, or any combinations of wastes that could or do pose a substantial hazard to human health or the environment. Waste may be classified as hazardous because of its toxicity, reactivity, ignitability, or corrosiveness. In addition, certain types of waste are "listed" or identified as hazardous in 40 CFR 261.

Asbestos-containing material is any material containing more than 1 percent asbestos. Asbestos is made up of microscopic bundles of fibers that may be airborne when distributed or damaged. These fibers get into the air and may be inhaled into the lungs, where they may cause significant problems. Due to its ability to withstand heat, fire, and chemicals, asbestos was historically used in construction material, and is typically found in ceiling tiles, pipe and vessel insulation, floor tile, linoleum, mastic, and on structural beams and ceilings. Laws that address the health risks of exposure to asbestos and asbestos-containing material include Toxic Substance Control Act (TSCA), OSHA regulations, and the CAA (Section 112 of the CAA, as amended, 42 USC § 7401 et seq.), Asbestos–containing material must be handled in accordance with procedures outlined in 40 CFR 61, Subpart M.

Lead-based paint was commonly used from the 1940s until the 1970s for exterior and interior painted surfaces. In 1978, the U.S. Consumer Product Safety Commission lowered the legal maximum lead content in most kinds of paint to trace amounts; therefore, buildings constructed after 1978 are presumed not to contain lead-based paint. The use and management of lead-based paint is regulated under Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992. Section 1017 requires the Secretary of the U.S. Department of Housing and Urban Development to issue guidelines for the implementation of federally supported work involving risk assessments, inspection, interim controls, and abatement of lead-based paint hazards.

Based on the date of construction, it is likely that a moderate percentage of buildings at EAFB may have lead-based paint. The EAFB Lead Hazard Management Program focuses on maintaining lead-based paints in acceptable conditions, addressing hazards as they develop, and incorporating lead abatement activities into upcoming renovation projects (EAFB 2003).

EAFB is a large-quantity generator of hazardous waste under the RCRA. Common waste streams include paint and associated wastes, expired shelf life items, and drained water from fuel tanks. All hazardous waste generated by EAFB is manifested to a USEPA permitted treatment, storage, and disposal facility. Hazardous waste is properly segregated, stored, characterized, labeled, and packaged for initial collection at one of 12 designated initial satellite accumulation points at EAFB. There are two 90-day Hazardous Waste Storage Areas (HWSA) at EAFB. All hazardous waste stored in 90-Day HWSAs is transported to USEPA permitted treatment, storage, and disposal facilities for permanent disposal (personal communication, Greg Johnson, Chief of Environmental Planning, EAFB).

Many of the buildings at EAFB were constructed in the 1950s when the use of asbestos and lead-based paint in construction materials was common. As necessary through the execution of work orders, inspection activities, or personal health concerns, a survey of a facility or specific portion of a facility is conducted by qualified bioenvironmental engineering personnel in coordination with the Asbestos Program Officer or through a contract (USAF 2000).

The ERP is the process through which contaminated sites and facilities are identified and characterized and existing contamination is contained, removed, and disposed of to allow for beneficial reuse of the property. ERP sites include landfills, underground waste, fuel storage areas, and maintenance-generated wastes and are discussed under the "Geology and Soils" section.

Pest and weed management for the railroad bed has included the application of pesticides and herbicides. Contamination found near the end of the spur at Base Supply (Building 7510) would need to be remediated in accordance with EPA regulations prior to performing any work at this location.

3.4.5 Cultural Resources

The Draft Cultural Resource Management Plan was completed for the Base in March 2002A coordination letter was sent to the SHPO regarding this project and their response is pending.

No archeological resources are known to exist on the Base (RTI 1997); therefore this resource was not considered for detailed analysis. A 1994 study examined all undisturbed areas and concluded that there is limited opportunity for the discovery of an intact, significant archaeological site. There are seven significant and eight potentially significant structures located on the Base as shown in **Table 3-5**. The World War II (WWII) Era properties strongly reflect the Base's state-level association with the WWII experience, retain substantial integrity, and are determined eligible for listing on the National Register of Historic Places (NRHP) for purposes of compliance with Section 106 of the NHPA and 36 CFR 800. Three Cold War Era historic buildings or structures are considered eligible for listing on the NRHP. The eight Cold War Era Luria wing hangars were identified as being potentially significant pending more detailed study of their remaining historic fabric because they are an important part of the military landscape at EAFB. These eight buildings will be considered provisionally eligible for listing on the NRHP.

Table 3-5. Structures of Historic or Architectural Significance: Ellsworth Air Force Base

Building Name	Building Number	Era	Status
Jet Engine Maintenance Shop	601	WWII	Significant
Ordnance Storage	6904	WWII	Significant
Small Arms Range	6905	WWII	Significant
Combat Arms Training Maintenance Building	6908	WWII	Significant
B-36 Aircraft Hangar	7504	Cold War	Significant
Segmented (Munitions) Magazine Storage	88106	Cold War	Significant
Segmented (Munitions) Magazine Storage	88289	Cold War	Significant
Luria Wing Hangars	7610	Cold War	Potentially Significant
Luria Wing Hangars	7612	Cold War	Potentially Significant
Luria Wing Hangars	7614	Cold War	Potentially Significant
Luria Wing Hangars	7616	Cold War	Potentially Significant
Luria Wing Hangars	7618	Cold War	Potentially Significant
Luria Wing Hangars	7620	Cold War	Potentially Significant
Luria Wing Hangars	7622	Cold War	Potentially Significant
Luria Wing Hangars	7624	Cold War	Potentially Significant

Source: EAFB 2003.

3.4.6 Geology and Soils

3.4.6.1 Geology

EAFB is located east of the Black Hills (Figure 1) in an area where sedimentary bedrock formations are at the surface or overlain by unconsolidated materials such as clay, sand, gravel, and soil. The site geology typically consists of unconsolidated materials underlain by the Pierre Shale bedrock. The thickness of these unconsolidated materials varies widely across the installation, but in general, ranges from 10 to 30 feet (USGS 1985). In general, the Pierre Shale is reported to be 860 feet thick at EAFB, as indicated from well logs for EAFB Production Well Number 1.

3.4.6.2 Topography and Drainage

The topography of the installation is level to gently sloping, with the exception of the northern most section of the base, which descends abruptly to the valley floor. The remainder of the Base slopes southward towards Box Elder Creek. The highest base elevation is 3,372 feet in the north, and the lowest is 3,040 feet in the south (Higginbotham & Associates 1984).

EAFB is located on a gently sloping north-south upland plateau between Elk Creek to the north and Box Elder Creek to the south. Box Elder Creek is an ephemeral stream, while Elk Creek is a perennial stream. Both creeks drain to the Cheyenne River. The extreme northern portion of the Base is drained by seven unnamed ephemeral drainages on a northward-facing escarpment to Elk Creek, approximately 5 miles to the northeast. To the south, surface drainage on the plateau follow a topographic slope toward the southeast via retention ponds, ditches, storm sewers, and ephemeral streams. Runoff then discharges into Box Elder Creek, 1 mile south of the installation boundary. In total, there are seven primary drainages on EAFB, each corresponding to an outfall permitted under a South Dakota Surface Water Discharge permit.

3.4.6.3 Soils

The soils on Base are primarily clays and clay-loams with the clay layer often creating a non-permeable layer between the surface and subsurface soils. There are 12 soil types on the Base as classified by the NRCS; however, most of the base soils can be grouped into three series (NRCS 1996). Well drained, alluvium Nunn series soils are dominant and cover approximately 85 percent of the installation. These soils consist of deep, well drained, nearly level to moderately sloping loamy soils, and occur on terraces and uplands. The surface layer is dark grayish brown loam about 7 inches thick. The subsoil is about 25 inches thick and consists of brown clay and clay loam. This soil is medium in fertility and moderate in organic matter content. The available water capacity is moderate to high and permeability is moderately slow on slopes. This soil has a moderate to severe erosion hazard.

Lismas clay covers most of the northern section of the Base. This soil is shallow, well drained, and clayey, and occurs on moderate to steep slopes. The surface layer is light, brownish, gray clay about 2 inches thick and the subsoil is grayish brown clay about 3 inches thick. The underlying material, to a depth of 15 inches, is light, brownish, gray clay with bedded soft shale below that. Lismas soils are low in fertility and organic matter, the available water capacity is very low, and permeability is slow to very slow. Runoff is rapid and the hazard of erosion is severe.

Onita clay loam is located on the uplands and high terraces in swales and on foot slopes. These soils formed in alluvium that washed from adjacent soils. The surface layer is grayish brown clay loam about 11 inches thick and the subsoil is silty clay. This soil is high in fertility and organic matter, the available

water capacity is high, and permeability is moderately slow. There is a moderate hazard of erosion where slopes exceed 2 percent (USAF 2001).

3.4.6.4 Groundwater

The quantity, flow direction, and rate of flow of groundwater beneath EAFB are determined by recharge, withdrawal, and the nature of the aquifers present. At EAFB, there is one unconfined aquifer and three confined aquifers (Inyan Kara, Minnelusa, and Madison), which could be used for water supplies. None of the confined aquifers are in hydraulic communication with the overlying unconfined aquifer. The shallow unconfined aquifer at EAFB is considered a federal Class II-B (potential source of drinking water) aquifer and possibly a Class II-A (discharge to surface water) aquifer (USEPA 1986 *in* EAFB 2003).

Confining beds of the Pierre Shale and other relatively impermeable Upper Cretaceous strata above and Permian-Jurassic strata below bound the confined Inyan Kara aquifer. The aquifer lies 1,900 feet beneath EAFB and consists of 350 to 500 feet of permeable sandstone belonging to the Fall River and Lakota formations. Average yield of the aquifer is 200 gallons/minute. The recharge zone for this aquifer is along the Fall River and Lakota formation outcrops, which are present as hogbacks 11 miles west of the installation, and is not in hydraulic connection with the shallow, unconfined aquifer. This aquifer is heavily used as a domestic water supply source in the Rapid City area.

The Minnelusa aquifer is a confined aquifer, which lies beneath approximately 1,000 feet of overlying Permian-Jurassic confining beds and above Pennsylvanian confining beds. The aquifer is a limestone unit approximately 600 feet thick, which lies 3,460 feet beneath EAFB. Average yield from this aquifer is 150 gallons/minute. The recharge zone for this aquifer lies further west than the Inyan Kara aquifer among foothills between Rapid City and the Black Hills. Some limited recharge also occurs through upward leakage from the underlying Madison aquifer. The uppermost part of the Minnelusa is the most heavily used aquifer in the communities near EAFB.

The deepest aquifer used as a domestic water supply source in this region is the Madison aquifer, which is located beneath 240 to 450 feet of Lower Pennsylvanian confining strata. This aquifer is a limestone deposit, which averages 350 feet in thickness and lies 4,150 feet beneath EAFB. Yield from this aquifer ranges from 22 to 500 gallons/minute. The recharge zone for this aquifer is from outcrops of this unit along the east edge of the Black Hills. The Madison provides the most dependable water quality of any of the regional, confined aquifers, but is not commonly tapped due to the expense of drilling wells to this depth. EAFB Production Well Number 1 is completed in this aquifer but is no longer used.

3.4.6.5 Environmental Restoration Program

There are 20 ERP sites on EAFB that are grouped into 12 OUs and eight individual sites. The greatest area of concern is OU-1, the Fire Protection Training Area, where in the past, waste oils, fuels, and solvents were burned. Most of the other OUs are related to landfill use, petroleum clean up, trichloroethylene (TCE), or industrial flightline operations.

Fourteen sites are regulated under federal CERCLA operations, with USEPA as the prime regulator. The other six sites are under the authority of the RCRA and specifically apply to areas that have "petroleum-only" as the primary contaminant. For these sites, the State of South Dakota is the prime regulator and will determine when the sites are deemed safe and considered closed.

More detailed information about the current status of EAFB ERP sites and OUs, environmental restoration, and associated environmental compliance programs, is available in the *Management Action Plan (MAP), Ellsworth Air Force Base, South Dakota, October 1996* (EAFB 1996a). The MAP presents a comprehensive strategy for implementing necessary response actions to support full restoration of the base. The MAP identifies all OUs under jurisdiction of the Federal Facilities Agreement (FFA), all underground storage tanks, and any remedial actions planned or currently being performed. The MAP is a dynamic document and is updated every 6 months to incorporate newly obtained information and reflect the completion or change in status of any remedial actions.

3.5 NATURAL RESOURCES

The analysis for this section included data from surveys, wetland delineations, the *Integrated Natural Resource Management Plan* (USAF 2001), *Final Basewide Wetland Management Plan* (EAFB 1996d), the *EAFB Draft General Plan* (USAF 2002a), and discussions with local experts. Coordination letters were sent to the USFWS, USACE, and the SDGFP. Responses are still pending for the USFWS and USACE. The SDGFP response letter stated that the project should have no negative effects on rare, threatened, or endangered species (Appendix A).

The affected environment for natural resources includes the native and introduced plants and animals that are on the Base that could be affected by the action alternatives. For discussion purposes, resources are divided into two categories: 1) vegetation and wildlife (including wetlands), and 2) threatened and endangered species. Federal and state-listed threatened and endangered species are discussed under a separate subsection.

3.5.1 Vegetation and Wildlife

The vegetation and wildlife section focuses on plant and animal species expected to be on or adjacent to the affected area. This includes wetlands, aquatic species potentially impacted by water quality changes, and species of concern. The threatened and endangered species section will discuss federal and state listed threatened and endangered species.

Potential habitat for wildlife was categorized as agricultural, wetland, developed, and undeveloped lands. Because natural vegetation such as grasslands and wetlands are undeveloped, there is a higher potential as wildlife habitat. Urban, residential, and commercial areas are considered developed and have a lower habitat potential for wildlife.

3.5.1.1 Vegetation

EAFB is located in the mixed-grass prairie portion of the Great Plains and, consequently, the historic vegetative cover consisted primarily of characteristic mixed-grass prairie species. Predominant species included western wheatgrass (*Agropyron smithii*), side-oats grama (*Bouteloua curtipendula*), blue gramma (*B. gracilis*), buffalo grass (*Buchloe dactyloides*), inland saltgrass (*Distichlis spicata*), Carolina lovegrass (*Eragrostis pectinacea*), foxtail barley (*Hordeum jubatum*), June grass (*Koeleria pyramidata*), needle-and-thread grass (*Stipa comata*), and green needlegrass (*Stipa viridula*).

EAFB is at the eastern edge of the Black Hills and surrounding vegetation is typical of the Northern Great Plains Grassland. Much of the area consists of a moderately dense, short to medium tall-grass prairie dominated by western wheatgrass, green needlegrass, blue grama, and needle and thread grass. Associated species include fringed sage or the women's sage of the Sioux (*Artemisia frigida*), June grass,

little bluestem (*Andropogon scoparius*), purple coneflower (*Echinacea angustifolia*), and other forbs. Elements of true short grass prairie, mixed-grass prairie, and bunch grass types are represented as well. The existing plant inventory consists of native grass and herbaceous plant species and other introduced landscape species suitably adapted to soil, climatic, and other environmental conditions of the region. In general, the environment limits plant numbers and species to those plants well adapted to limited precipitation, heavy soil texture, short growing season, high winter sun intensity, and strong winds (Higginbotham & Associates 1984).

In February 1994, a Basewide survey was performed to catalogue all sensitive species of plants and animals within the confines of the Base and map their locations to help guide their management. EAFB was found to have three distinct habitat types based on vegetative analysis, moisture availability, and impact of disturbance on the area: remnant mixed grass prairie, riparian, and disturbed. (Peabody and Williams 1994; USAF 2001)

Remnant mixed grass prairie habitat is found in the less disturbed areas of the base and is dominated by crested wheatgrass (*Agropyron cristatum*) with large amounts of western wheatgrass and green needle grass. This habitat type covers the majority of natural areas on the base that are not impacted by routine mowing and/or permanent structures (i.e., buildings, runways, etc.). The soil found in this habitat type is a Lismas clay with slopes from 15 to 40 percent.

Riparian habitat accounts for a very small portion of the Base land cover and is primarily confined to a narrow strip along the western edge of the Base and along the Base lakes. This habitat is considered riparian habitat and contains a mix of species including cottonwood (*Populus deltoides*), narrow leaved cattail *(Typha angustifolia*), sandbar willow (*Salix exigua*), and various sedges (*Carex* spp.). The soil found in this habitat is an Onita clay loam with slopes from 0 to 4 percent (Peabody and Williams 1994; USAF 2001).

Dominant emergent and shoreline vegetation noted on wetland delineation forms completed for Heritage and Gateway Lakes include sedge (*Carex* spp), Reed canary grass (*Phalaris arundinacea),* broad-leaved cattail (*Typha latifolia),* narrow-leaved cattail *(Typha angustifolia),* softstem bulrush *(Scirpus validus),* river bulrush *(Scirpus fluvitalis),* prairie cord-grass *(Spartina pectinata),* red osier dogwood *(Cornus stolonifera),* sandbar willow *(Salix exigua),* black willow *(Salix nigra),* and eastern cottonwood *(Populus deltoides)* (USAF 2002a).

Disturbed habitat covers the majority of disturbed areas on the Base. The disposition of the railroad alternatives are located primarily in areas classified as disturbed. This disturbed habitat is a result of continuous mowing, areas with permanent structures or fenced enclosures for grazing. These areas are dominated by Kentucky bluegrass (*Poa pratensis)* with occasional weedy species such as field bindweed (*Convolvulus arvensis),* common dandelion (*Taraxacum officinale),* hairy crabgrass (*Digitaria sanquinalis),* and some ornamental varieties of plants. This habitat that covers the majority of the Base offers very little or no habitat for sensitive species of plants or animals. The predominant soil found in this habitat type is Nunn clay loam with slopes from 0 to 6 percent (Peabody and Williams 1994; USAF 2001).

Other areas that may be affected include land that is not currently mowed or grazed, but appears to have been hayed or mowed in the past. Most of these areas appear to support tall grass that may contain both native and non-native species. An area of trees about 500 feet long occurs in the vicinity of the southern section of the Base. No impacts to trees are expected (Peabody and Williams 1994, Grazing Map, Grounds Maintenance Map, and a review of aerial photography 1993 and 2000).

3.5.1.2 Wildlife

Wildlife in and around the base proper is typical of a semi-developed grassland area and includes mule and white-tailed deer (*Odocoileus hemionus,* and *O. virginiana*), red fox (*Vulpes vulpes*), white-tailed jackrabbit *(Lepus townsendii*), eastern cottontail (*Sylvilagus floridanus*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), black-tailed prairie dog (*Cynomys ludovicianus*), and little brown and long-legged bats (*Myotis lucifugus*, and *M. volans*). Birds common to the area include the red-tailed hawk (*Buteo jamaicensis*), horned lark *(Eremophila alpestris*), blue-winged teal (*Anas discors*), mallard (*Anas platyrhynchos*), chimney swift (*Chaetura pelagica*), turkey vulture (*Cathartes aura*), killdeer (*Charadrius vociferus*), mourning dove (*Zenaida macroura*), and American crow (*Corvus brachyrhynchos*).

Herds of white-tailed and mule deer occupy the tall grass areas and riparian draws, including the Main Base Drainage, during the day and feed in open grassy areas from dusk to dawn. Red fox have been observed in several large open grassy areas, including the large open areas on the northern part of the Base. A fox den was observed near the flightline near the junction of Schilling and Menoher Roads. Prairie dogs are currently located in a large mowed area north of the main gate (approximately 30 acres), in the Munitions Storage Area, in the Riding Club/Stables Area, and in a small colony east of the firing range and north of the housing area (proposed Watchable Wildlife Area) (USAF 2001).

EAFB is near the Central Flyway, a north-south migratory bird route. Migratory bird species such as ducks, Canada geese, and hawks migrate through the Base in the spring and fall. All migratory birds have protection under the Migratory Bird Treaty Act. Although limited monitoring information is available, neo-tropical grassland species and waterfowl could be expected to use the proposed project area on a limited, seasonal basis. Typically, water and associated vegetation could provide suitable habitat for some migratory species. However, habitat conditions on the proposed project area limit migratory bird use. Much of the grassland area is mowed to discourage bird use and reduce aircraft bird strikes. The wetland area and associated uplands have historically (and currently) been used to pasture horses from the Riding Club.

Several sensitive or special-concern species have been found on EAFB. These include Swainson's hawk (*Buteo swainsoni*), burrowing owl (*Athene cunicularia*), loggerhead shrike (*Lanius ludovicianus*), and the silver-haired bat (*Lasionycteris noctivagans*). At EAFB, burrowing owls are found near the firing range in the prairie dog town north of the housing area (currently being considered as a Watchable Wildlife Area), and in 1989, were reported in an area northwest of the firing range near the railroad spur. Burrowing owls successfully nested in the prairie dog town north of the housing area in 2000 and 2001.

Swainson's hawks on EAFB are associated with wooded riparian swales west of the flightline, especially the western drainage where two hawks and a nest were observed during surveys in 1994, and east of the Fire Training area. Swainson's hawks were also observed nesting in the flightline area in the summer of 1996. Swainson's hawks eat small vertebrates and insects, which are plentiful in the riparian area of the base. Swainson's hawks are protected under the Migratory Bird Treaty Act.

The loggerhead shrike migrates along the western side of the runway, and possibly through the center of the base and has been observed near the Alert Apron. The Migratory Bird Treaty Act protects the loggerhead shrike.

The distribution of the silver-haired bat and their numbers on-Base are unknown; however, they were found in the former Wherry housing area east of the golf course. Bats were roosting in the old, vacated houses but the Wherry housing has since been demolished.

Various raptors are commonly observed at EAFB. There have been sightings of a golden eagle (*Aquila chrysaetos*) in the northwest portion of the base while red-tailed hawks and American kestrels (*Falco sparverius*) have been encountered throughout the area (USAF 2001).

3.5.1.3 Threatened or Endangered Species

According to EAFB's Integrated Natural Resource Management Plan (USAF 2001), no federally listed species or critical habitat were located on Base. However, the black-tailed prairie dog (*Cynomys ludovicianus*) became a federal candidate species in 2000. Several small black-tailed prairie dog colonies are located on EAFB or adjacent to the base boundary on private land. None of these colonies occurs within the proposed railroad disposition (EAFB 2003).

Federally listed species that have the potential to occur in the region include the endangered whooping crane, least tern, black-footed ferret, and the threatened bald eagle. However, surveys and monitoring indicate that it is unlikely for any of these species to occur on EAFB due to the lack of suitable habitat for these species on EAFB and the surrounding area.

3.6 OTHER

Gate usage data for EAFB were collected in June and July of 2002. **Table 3-6** presents the average weekday daily traffic for the three gates. The traffic data indicate that on an average weekday approximately 5,500 to 5,900 vehicles enter EAFB and between 5,900 and 6,600 vehicles leave the Base. These vehicles travel on the Base roadways during the time when trucks would be hauling material. The transportation system of the Base is operating well below full capacity (EAFB 2003).

Table 3-6. Average Weekday Daily Traffic for Base Gates, 2002: Ellsworth Air Force Base

Liberty (Main Gate) In		Liberty (Main Gate) Out		Bismarck (Commercial Gate) In		Bismarck (Commercial Gate) Out		Patriot (School Gate) In		Patriot (School Gate) Out	
June	July	June	July	June	July	June	July	June	July	June	July
3,003	2,793	2,897	2,181	1,347	1,613	1,097	1,682	1,527	1,772	1,982	2,704

Source: EAFB 2003.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

Potential environmental impacts cannot be determined without first understanding the existing conditions in the affected environment. For this reason, the impact analysis process involves two steps. First, this EA presented the existing environmental setting, or the "affected environment" (Chapter 3). Second, it used details of the Proposed Action and alternatives (Chapter 2) to assess their impacts on the existing environment, or the "environmental consequences." This chapter (Chapter 4) presents that assessment of environmental consequences for the Proposed Action and the No Action alternative.

Assessment of environmental consequences is also based on an understanding that different resources are not equally sensitive to all elements of an action. For example, cultural resources, especially archaeological sites, are most likely affected by activities that disturb the ground (such as facility construction or grading) and are usually not affected by changes in noise (which could occur at the airfield). On the other hand, certain animal species may be more sensitive to aircraft noise than to other activities, such as short-term construction noise.

The environmental impact analysis process is designed to focus analysis on those environmental resources that could potentially be affected by the disposition of the railroad project.

In Chapter 4, this assessment compares what would occur if the Proposed Action or alternative were implemented. This comparative approach is used in the text tables, and figures to allow the public and decision-makers the ability to compare the alternatives according to the nature, magnitude, and duration of impacts.

4.2 NOISE AND LAND USE

During disposal of the railway, normal construction machinery noise would be produced. The proposed disposition of the railroad alternatives cross or are adjacent to several land use areas such as Greenway, Outdoor Recreational, and Open Space where construction noise would be more noticeable than in other areas crossed such as Industrial and Community Commercial. Work on the project would be conducted between 6:00 am and 10:00 pm. The disposal of the railroad is generally consistent with current and future Base land use plans.

4.3 AIR QUALITY

4.3.1 Temporary Emissions Due to Demolition and Hauling Activities

Air emissions generated from the disposal of the railroad would come from three sources: diesel fuel combustion in construction equipment vehicles and generators, material handling of fill and ballast, and vehicle traffic. Combustion emissions are based on the equipment's horsepower ratings and estimated hours of operation. Dust emission for the handling of fill material and ballast are based on the amount of material moved. The vehicle dust emissions are based on the expected mileages for the vehicles used.

The estimate of temporary emissions due to demolition and hauling activities generated by this project was based on worst-case, in terms of air emission potential, construction option for the railroad disposal embankment removal alternative. Any other action alternative would result in lower emissions.

Table 4-1 shows the project's emissions, in tons of pollutant per year.

Table 4-1. Projected Emissions Related to the Action Alternative: Ellsworth Air Force Base

Pollutant	Project Air Emissions (tons/year)	Current Actual Air Emissions for EAFB (2001-2002) (tons/year)
PM	77.45	—
PM_{10}	43.40	2.2
NO_X	2.31	21.4
SO_X	0.13	0.5
CO	1.49	11.1
VOC	.33	1.8

Emissions calculations are documented in Appendix B. Emission factors were taken from *Fifth Edition, AP-42, Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources* (USEPA 1998), and *CEQA Air Quality Handbook* (SCAQMD 1993).

These emissions would be short term and would occur over a period of 5 to 8 weeks. Though not considered for permitting purposes, the emissions generated by the project's activities are less than USEPA thresholds for determining major source status. Construction emissions for all but PM_{10} and VOCs are less than the annual emissions generated by stationary sources at the Base. PM_{10} and VOC emissions are similar to the potential emissions from the base. Fugitive PM_{10} is generated primarily from truck traffic over unpaved roadways, bulldozer, and compactor operations. No control efforts were assumed for these activities, so these estimates are conservatively high. Emissions of all pollutants from this construction activity contribute very little to the total pollutant load in AQCR 205.

4.3.2 Recurring Annual Emissions

There will not be any recurring annual emissions generated by this project. The only air emissions would be generated during construction.

4.4 WATER RESOURCES

4.4.1 Base Lakes, Wetlands, and Watersheds

The Base lakes and Greenway provides an open space area with desirable visual qualities, lie away from the railroad, and will suffer no impact during the removal process.

Wetland impacts are discussed under "Biological Resources."

4.4.2 Floodplains

The approximate numbers of floodplain acres that would be impacted by the action alternatives are presented in **Table 4-2**. EO 11988 requires federal agencies to avoid if possible, adverse impacts to floodplains. The railroad disposal would have an insignificant impact on floodplains.

Table 4-2. Estimated Floodplain Impacts: Ellsworth Air Force Base

Alternative	Estimated Amount of Floodplain Impact (acres)
Alternative 1 (No Action)	0
Alternative 2A and 2B	1.56
Alternative 3A and 3B	1.56
Alternative 4	0
Alternative 5A and 5B	0

Note: Based on 25-foot wide construction impact area on each side of center of railroad tracks for all alternatives.

4.4.3 Safety and Occupational Health

The potential for chemical exposure during construction activities related to the historic and current use of pesticides and herbicides to manage pests and weeds has been evaluated. Soil sampling results (Appendix C) have identified hazardous substances near the end of the siding at Base Supply (Building 7510). Soil remediation would be required before performing any work at this location.

Approximately 1,700 feet of the northern portion of track in the missile loading area is located within the Q-D arcs (USAF 2001).

4.4.4 Hazardous Materials and Solid Waste

No building demolition would occur as part of the Proposed Action. However, the railroad beds have been managed using pesticide and herbicides to control pests and weeds. The soils underlying the railroad beds were tested. Contamination found near the end of the spur at Base Supply (Building 7510) would need to be remediated in accordance with EPA regulations prior to performing any work at this location.

The contractor would be required to store and handle hydraulic fluid, diesel fuel, or other potentially hazardous materials in full compliance with regulations and existing plans.

Potential impacts related to the ERP sites are presented under the "Geology and Soils" section.

Solid waste will consist of scrap iron including rails, spikes, splicers, and metal plates, wooden ties, and gravel ballast. **Table 4-3** lists the solid waste generated by the project. For example, if gravel ballast is left to be a base for a paved 3-mile long running track, only 1.9 miles of gravel will have to be removed. This will have to be a consideration if the roadbed is to be used for other purposes. Alternative 2B is the only alternative where the roadbed embankment is built up to a considerable extent located south of the Bismarck Gate. For all the other alternatives, the low roadbed can be graded back into the borrow pit and the original land contour (the contours before the railroad was built) can be restored. The embankments

are illustrated in Figure B-1 of Appendix B. Removal of Section 17 and its associated culverts, and a portion of Sections 16 and 18, would be sufficient to preserve the small area of wetland crossed by the railroad embankment.

Table 4-3. Estimated Amounts of Solid Waste Generated: Ellsworth Air Force Base

Alternative	Scrap Iron (tons)	Wooden Ties (tons/ cubic yards)	Ballast and Gravel (tons/ cubic yards)	Fill Dirt from Berms (tons/ cubic yards)
Alternative 1 (No Action)	0	0	0	0
Alternative 2A	1,300	860/2,300	9,500/7,600	0
Alternative 2B	1,300	860/2,300	9,500/7,600	12,000/9,300
Alternative 3A and 3B	1,000	690/1,840	7,600/6,100	0
Alternative 4	80	52/140	600/460	0
Alternative 5A and 5B	195	130/350	1,400/1,100	0

Assumptions: (1) Scrap iron weighs 50 pounds/lineal foot;
(2) Wooden ties weigh 200 pounds each, are 18 inches apart, and have a volume of about 3.5 cubic feet;
(3) Cubic yard of fill dirt and gravel weighs 2,500 pounds; and,
(4) Ballast is 8 feet wide and 1 foot deep.

4.5 BIOLOGICAL RESOURCES

4.5.1 Habitat

The disposition of the railroad alternatives are primarily located in areas classified as disturbed. This disturbed habitat is a result of continuous mowing, areas with permanent structures, or fenced enclosures for grazing. These areas are dominated by Kentucky bluegrass (*Poa pratensis)* with occasional weedy species such as field bindweed (*Convolvulus arvensis)*, common dandelion (*Taraxacum officinale)*, hairy crabgrass (*Digitaria sanquinalis)*, and some ornamental varieties of plants. Portions of the Greenway include some areas that were seeded with native prairie grasses, but are currently mowed. This disturbed habitat that covers the majority of the Base offers very little or no habitat for sensitive species of plants or animals.

Other areas that may be affected include land that is not currently mowed or grazed, but appears to have been hayed or mowed in the past. Most of these areas appear to support tall grass that may contain both native and non-native species. An area of trees about 500 feet long occurs in the vicinity of the southernmost section of Alternatives 2A and 2B. Impacts to trees would be avoided to the extent possible (Peabody and Williams 1994, Grazing Map, Grounds Maintenance Map, and a review of aerial photography 1993 and 2000).

According to EAFB's Integrated Natural Resource Management Plan (USAF 2001), no critical habitats were located on Base so no impacts to critical habitats occur.

4.5.2 Threatened or Endangered Species

According to EAFB's Integrated Natural Resource Management Plan (USAF 2001), no federally listed species or critical habitats were located on Base; therefore, no impacts to federally listed species would occur.

4.5.3 Wetlands

The estimated acres of wetlands impacted by the alternatives are presented in **Table 4-4** (USAF 2003).

Table 4-4. Estimated Wetland Impacts: Ellsworth Air Force Base

Alternative	Estimated Amount of Wetland Impact (acres)
Alternative 1 (No Action)	0
Alternative 2A	0
Alternative 2B	<.01
Alternative 3A and 3B	0
Alternative 4	0
Alternative 5A and 5B	0

Note: Based on 25-foot wide construction impact area on each side of center of railroad tracks for all alternatives.

EO 11990 requires installations to follow specific procedures and Section 404 of the CWA establishes permitting requirements for actions involving wetlands. Railroad disposition design and removal will avoid and minimize wetland impacts to the extent feasible and related impacts will be mitigated.

4.6 CULTURAL RESOURCES

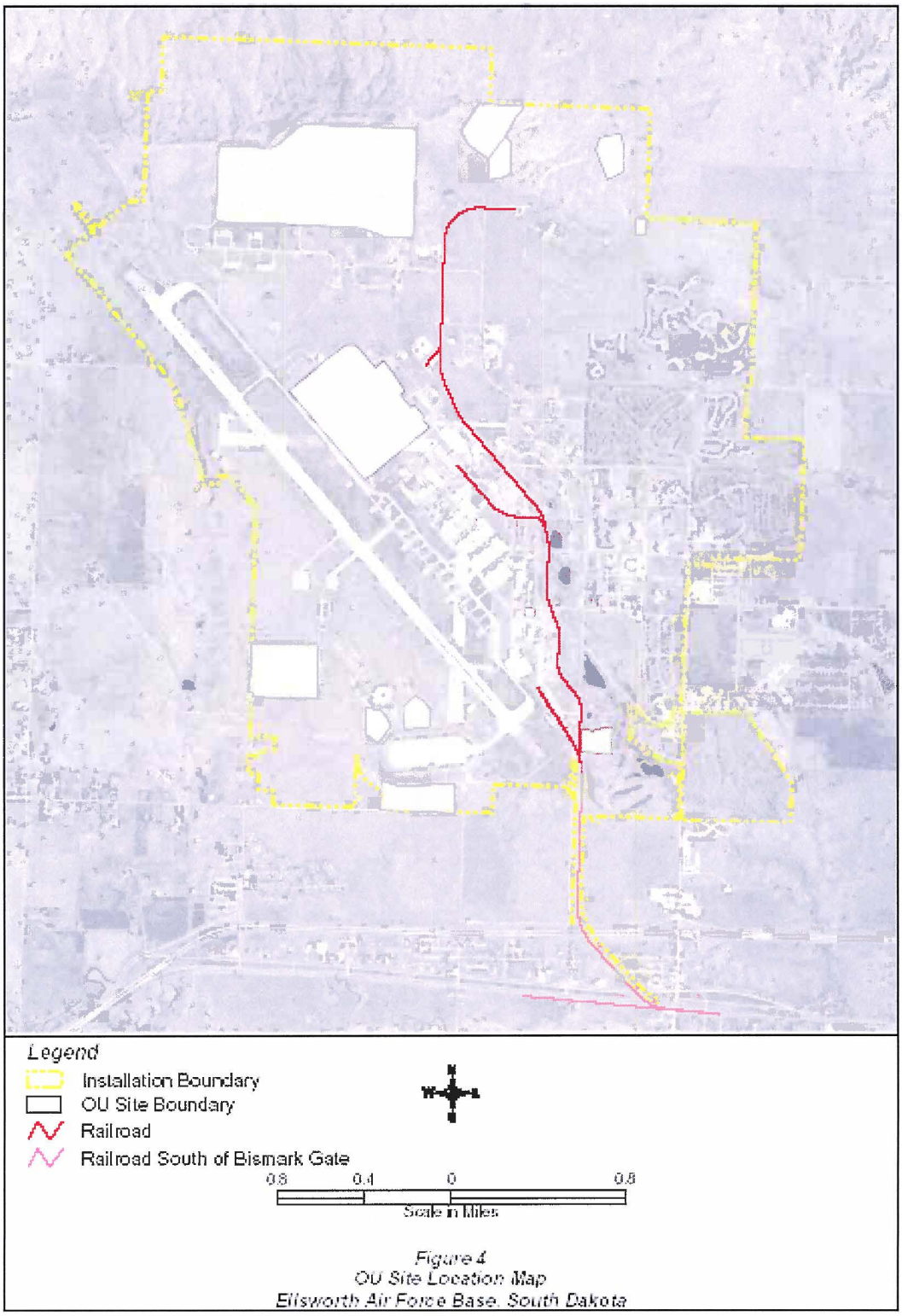
No archeological resources are known to exist on the Base (RTI 1997); therefore, this resource was not considered for detailed analysis. A 1994 study examined all undisturbed areas and concluded that there is limited opportunity for the discovery of an intact, significant archaeological site. There are seven significant and eight potentially significant structures located on the Base. There are no significant or potentially significant historic and/or architectural buildings in the vicinity of the action alternatives.

4.7 GEOLOGY AND SOILS

4.7.1 Environmental Restoration Program

ERP sites in the vicinity of the alternatives are shown in **Figure 4**. With the exception of OU-11, the Basewide OU, only a small section, approximately 375 feet of railway, is located within an ERP site (OU-9). The railway skirts the southwestern boundary of OU-6 and the southern boundary of OU-3 at the missile loading area. Approval must be obtained from the ERP manager, 28 CES/CEVR, prior to the railroad disposition. The Remedial Investigations conducted at OU-9 in 1995 indicated that surface water,

Figure 4. OU Site Location Map: Ellsworth Air Force Base, South Dakota



sediment, and soils within OU-9 were contaminated with various chemicals. The chemical constituents were primarily petroleum components from flightline operations and storage activities. As a result, if groundwater is intercepted or contaminants are found during excavation work (based on visual and olfactory evidence), the contractor would stop excavation and consult with ERP staff concerning any necessary testing or monitoring that may be required. No soil would be disposed of off-Base.

More detailed information about the current status of EAFB ERP sites and OUs, environmental restoration, and associated environmental compliance programs, is available in the *Management Action Plan (MAP), Ellsworth Air Force Base, South Dakota, October 1996.*

4.7.2 Soils

The soils on-Base are primarily clays and clay-loams with the clay layer often creating a non-permeable layer between the surface and subsurface soils. The soil types consist primarily of well-drained alluvial Nunn series, Lismas clay, and Onita clay loam.

Water erosion is a management concern for the steeper areas where there is little or no vegetative cover. These soils are also subject to wind erosion. Standard demolition practices would be implemented in the form of erosion and sediment control during demolition, minimization of steep slopes, and early establishment of vegetative cover to minimize erosion.

4.8 SOCIOECONOMICS

The action alternatives analyzed would not result in additional long-term jobs, changes in Base population, or household income. Temporary local economic impacts would occur during the estimated 5- to 8-week construction period. Local economic impacts include the hiring of local firms for hauling and some construction activities, as well as lodging and board for an estimated 5 to 10 personnel who would travel to the Base to work on the projects.

4.9 TRANSPORTATION

All of the action alternatives would result in increased traffic due to material being hauled to and from the site during the construction period. An estimated 80 truckloads of scrap iron, railroad ties, ballast and fill will be removed over an estimated 3-month period. An estimated 1,000 truckloads of material such as scrap iron, wooden ties, and aggregate would be removed from the site over a 2-month period or about 25 truckloads per day for 40 days.

This temporary increase in traffic may be noticeable during the morning, midday, and evening higher traffic periods. However, it is only a minor addition to the average weekday traffic levels of approximately 5,500 to 5,900 vehicles that enter EAFB and between 5,900 and 6,600 vehicles that leave the Base. These vehicles travel on the Base roadways during the time when trucks would be hauling silt to the temporary loading and permanent disposal areas. The transportation system of the Base is operating well below full capacity.

5.0 CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

5.1 CUMULATIVE EFFECTS

This section provides: (1) a definition of cumulative effects; (2) a description of past, present, and reasonably foreseeable actions relevant to cumulative effects; and (3) an evaluation of cumulative effects potentially resulting from these interactions.

5.1.1 Definition of Cumulative Effects

CEQ regulations stipulate that the cumulative effects analysis within an EA should consider the potential environmental impacts resulting from "the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7). Recent CEQ guidance in *Considering Cumulative Effects* affirms this requirement, stating that the first steps in assessing cumulative effects involve defining the scope of the other actions and their interrelationship with the Proposed Action. The scope must consider geographic and temporal overlaps among the Proposed Action and other actions. It must also evaluate the nature of interactions among these actions.

Cumulative effects are most likely to arise when a relationship or synergism exists between a Proposed Action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with, or in proximity to, the Proposed Action would be expected to have more potential for a relationship than actions that may be geographically separated. Similarly, actions that coincide, even partially, in time would tend to offer a higher potential for cumulative effects.

To identify cumulative effects, this EA analysis addresses three questions:

1. Does a relationship exist such that elements of the Proposed Action might interact with elements of past, present, or reasonably foreseeable actions?

2. If one or more of the elements of the Proposed Action and another action could be expected to interact, would the Proposed Action affect or be affected by impacts of the other action?

3. If such a relationship exists, does an assessment reveal any potentially significant impacts not identified when the Proposed Action is considered alone?

5.1.2 Past, Present, and Reasonably Foreseeable Future Actions

This EA applies a stepped approach to provide decision-makers with not only the cumulative effects of the Proposed Action, but also the incremental contribution of past, present, and reasonably foreseeable actions.

5.1.2.1 Past and Present Actions Relevant to the Proposed Action

Since its activation, EAFB has supported a number of missions. The 44th Strategic Missile Wing supported Minuteman missiles from its creation until its deactivation in 1994. Currently, EAFB is the home of the 28th Bomb Wing (B1-B bombers) with two bomb squadrons, the 37th Bomb squadron and the 34th Bomb Squadron. Total employment is approximately 3,500 military and civilian employees, down

from a high point population of 8,640 in 1989. As an active military installation, the Base undergoes periodic changes in mission and in training requirements. This process of change is consistent with the U.S. defense policy that the USAF must be ready to respond to threats to American interests throughout the world. Recent projects include the construction of the 34th Bomb Squadron Headquarters in 1999, the Fire Crash Rescue Building in 1998, and the Rushmore Center in 1995-1996. At this time, there is no conceivable change in mission that would require use of a railroad (Meyer 2003).

The ERP resulted in the implementation of remedial actions such as groundwater extraction systems and landfill covers. The Base, like any other major institution, also requires occasional new construction, facility improvements, and infrastructure upgrades. EAFB is currently upgrading portions of its water and wastewater systems and is completing the construction of an education center and Civil Engineer Squadron facility.

5.1.2.2 Incremental Impacts of the Proposed Action with Reasonably Foreseeable Future Actions

During the timeframe Fiscal Year (FY) 02 to FY 05, EAFB has proposed a number of actions that are independent of the Proposed Action and would be implemented irrespective of a decision on the proposed disposition of the railroad disposition. Construction programs include a drainage ditch and an erosion control improvement project for the primary instrument runway in 2004, and new family housing, also in 2004.

5.1.3 Analysis of Cumulative Impacts

The following analysis examines how the impacts of these other actions might be affected by those resulting from the Proposed Action at EAFB, and whether such a relationship would result in potentially significant impacts not identified when the Proposed Action is considered alone.

The Civil Engineering Complex, 34th Bomb Squadron Headquarters, Fire Crash Rescue Building, Military Working Dog Kennel, Education Center, and Rushmore Center have been constructed within the last 5 years and were determined not to have a significant effect on the environment.

An EA for the proposed housing replacement program (USAF 2002c) also concluded that the program would not have a significant impact on the environment. Other current and future infrastructure actions would not be expected to result in more than negligible impacts either individually or cumulatively. All actions affect very specific, circumscribed areas, and the magnitude of the actions is minimal.

Corrective action measures related to the ERP program have adversely impacted jurisdictional wetlands, and the proposed drainage ditch and erosion control project would also adversely impact a jurisdictional wetland. These past and future actions, as well as the Proposed Action, which would adversely impact a non-jurisdictional wetland, have included or would include one-to-one wetland mitigation at other areas of the Base. Therefore, the combined environmental consequences of these actions would remain below the threshold of significance for this resource.

Stormwater runoff from the Proposed Action and previous and future projects has been or would be controlled through minimizing the area disturbed and implementing erosion control and design measures as specified in the construction documents. Therefore, the combined impacts of these actions would remain well below the threshold of significance for any resource category.

5.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The NEPA requires that environmental analysis include identification of "... any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented." Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable timeframe. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the demolition of an historic building).

For the Proposed Action, most resource commitments are neither irreversible nor irretrievable. Most environmental consequences are short term and temporary (such as air emissions from demolition). Those limited resources that may involve a possible irreversible or irretrievable commitment under the Proposed Action are discussed below.

The disposition of the railroad would require consumption of limited amounts of materials typically associated with demolition (e.g., fuel for equipment and water for settling dust). The amount of these materials used is not expected to significantly decrease the availability of these resources.

The demolition of the railroad will result in a large accumulation of scrap iron, wooden railroad ties, ballast mixed with dirt, and fill material from the embankments south of the Bismarck Gate. The iron can be sold for scrap. The ties can be used either on-Base or recycled locally for landscaping purposes. The ballast and fill material can be reused on-Base or used for fill.

6.0 PERSONS AND AGENCIES CONTACTED

Mr. James Oehlerking
U.S. Army Corps of Engineers

Ms. Natalie Gates
U.S. Fish and Wildlife Service

Mr. Doug Backlund
Natural Heritage Program
South Dakota Department of Game, Fish, and Parks

Mr. Jack Erickson
Fisheries Biologist
South Dakota Department of Game, Fish and Parks

Mr. Tim Carlson
Cedar American Rail Holdings
140 North Phillips
Sioux Falls, SD 57104

MAY 8, 2003, MEETING ATTENDEES

Mark Wheeler, 28 CES/CEV, EAFB

Wallace Smart, 28 BW/SE, EAFB

Lana Sakos, 28 CES/CER, EAFB

John Morgenstern, CES/CEVP, EAFB

Beth Moyer-Durham, SAIC

Richard Grueschow, 28 CES/CEOH, EAFB

Ken Brinster, SAIC

Glenn Meyer, 28 CES/CD, EAFB

Nathan Shirey, 2nd Lt., 28 CES/CEV, EAFB

Karen Hoffman, 28 CES/CERR, EAFB

Twyla Israel, 28 LRS/LGQD, EAFB

7.0 LIST OF PREPARERS AND CONTRIBUTORS

2nd Lt. Nathan Shirey, Ellsworth AFB
B.S. Mechanical Engineering, 2002
Years of Experience: 1.5

Ken Brinster, Project Manager
B.S. Biology, 1964
M.S. Geology, 1970
Years of Experience: 30+

Beth Moyer-Durham
B.S. Biology, 1998
Associates of Applied Science, 1984
Years of Experience: 9

Jonathan Cohen
B.A. Communication Arts, 1983
Years of Experience: 8

Greg Johnson
Chief of Environmental Planning
Ellsworth AFB

Karen Hoffman
Chief of Real Property Office
Ellsworth AFB

Twyla Israel
Chief of Distribution Flight, Logistics Readiness Squadron
Ellsworth AFB

Richard Grueschow
Chief of Heavy Repair, CE Operations
Ellsworth AFB

8.0 REFERENCES CITED

EAFB 1995. *Ellsworth Air Force Base Joint Land Use Study*. Prepared for Ellsworth Air Force Base. South Dakota. June 1995.

EAFB 1996a. *Management Action Plan (MAP), Ellsworth Air Force Base, South Dakota.* October 1996.

EAFB 1996b. *EAFB Floodplain Delineation Study*. Prepared by the USACE, Omaha District for ACC. September 1996.

EAFB 1996c. *EAFB Floodplain Optimization Study*. USACE, Omaha District. October 1996.

EAFB 1996d. *Draft Final, Basewide Wetland Management Plan, Tier I, Ellsworth Air Force Base, South Dakota*. Prepared for USACE, Omaha District, and ACC. February 1996.

EAFB 2003. *Environmental Assessment for Running Trail Construction, Ellsworth Air Force Base, South Dakota*. May 2003.

Higginbotham & Associates, P.C. 1984. *Ellsworth Air Force Base, South Dakota, Comprehensive Plan.* Prepared for Base Civil Engineer, 44th Strategic Missile Wing and Headquarters Strategic Air Command, Offutt Air Base, Nebraska.

Meyer 2003. Glenn Meyer, Deputy Squadron Commander for Civil Engineering, Ellsworth Air Force Base. "Railway Disposition Meeting, Ellsworth Air Force Base." May 8, 2003.

NRCS 1996. *Soil Survey of Custer and Pennington Counties, Prairie Parts, South Dakota.*

Peabody, F.J., and G. Williams. 1994. *Biological Survey of Ellsworth Air Force Base, South Dakota.* Department of Biology, University of South Dakota. Vermillion, South Dakota.

Renewable Technologies, Inc. (RTI) 1997. *Ellsworth Air Force Base Cultural Resources Survey Report.* September 1997.

South Coast Air Quality Management District (SCAQMD). 1993. *CEQA Air Quality Handbook.* April 1993.

USAF 2000. *Asbestos Management Plan.*

USAF 2001. *Integrated Natural Resource Management Plan.* November 2001.

USAF 2002a. *Draft General Plan, Ellsworth Air Force Base, South Dakota.* March 2002.

USAF 2002b. *Draft Drainage Ditch and Erosion Control Improvement for the Primary Instrument Runway EA.*

USAF 2002c. *Proposed Ellsworth Replacement Housing Program EA*. April 2002.

USAF 2003. *Final Natural Resource Database and Mapping and Wetland Database and Mapping Report, Ellsworth Air Force Base, South Dakota.* January 2003.

USEPA 1998. "Residential Furnaces." *Compilation of Air Pollutant Emission Factors, AP-42, Volume I.* 1998.

USGS 1985. *Availability and Quality of Water from the Bedrock Aquifers in the Rapid City Area, South Dakota.* U.S. Geological Survey. Water-Resources Investigations Report 85-4022. Rapid City, South Dakota. 1985.

APPENDIX A

AGENCY COORDINATION LETTERS

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 28TH MISSION SUPPORT GROUP (ACC)
ELLSWORTH AIR FORCE BASE, SOUTH DAKOTA

June 10, 2003

Dakota Minnesota & Eastern Railroad
Attn: Tim Carlson
140 N. Phillips Ave
Sioux Falls, SD 57104

Mr. Carlson:

The Air Force is looking into the matter of the railway disposition for the Dakota, Minnesota and Eastern (DM&E) railroad section that is located on Ellsworth AFB. Preliminary information and analysis related to the proposed project is included in the following text. Please feel free to contact us with questions or comments.

Proposed Project Overview

This railway begins near the western end of the "Box Elder Passing Track" on the DM&E Railroad Corporation's right-of-way in Box Elder, SD. The railway under consideration traverses the Base and ends at the missile ramp located at the north end of the Ellsworth Air Force Base. The track in question consists of approximately 5.0 miles of "main" and "side" track that has been inactive for over 10 years due, in part, to the expense of repair and upkeep.

Threatened and Endangered Species

There are no federally listed species (i.e., whooping crane, least tern, black-footed ferret, bald eagle) located on Ellsworth AFB due to the lack of suitable habitat. Although the black-tailed prairie dog (*Cinemas ludovicianus)* has been identified as a candidate species for Federal listing (USFWS, South Dakota Field Office, January 2002), this species is not found in the project area.

Migratory bird species, Federally listed species, and sensitive or special-concern species (Swainson's hawk, the burrowing owl, the loggerhead shrike, and silver-haired bat) all have the potential to occur in this region. However, no designated or proposed critical habitats would be affected by the removal of the railway.

As part of the Bird/Wildlife Aircraft Strike Hazard (BASH) program much of the grass adjacent to the wetlands are mowed to discourage bird use and to reduce aircraft bird strikes.

Dakota Minnesota & Eastern Railroad
Attn: Tim Carlson
140 N. Phillips Ave
Sioux Falls, SD 57104

June 10, 2003
Page 2

Habitat and Predominant Vegetation

The entire railway is classified as disturbed habitat as a result of continuous mowing along the right-or-way. This area is dominated by Kentucky bluegrass (*Poa pratensis)* with occasional weedy species such as Field bindweed (*Convolvulus arvensis)*, Common dandelion (*Taraxacum officinale)*, Hairy crabgrass (*Digitaria sanquinalis)*, and some ornamental varieties of plants. Portions of the Base include areas that have been seeded with native prairie grasses, but are currently being mowed and therefore provide little or no habitat for sensitive species of plants or animals. The soil found in this area is a Nunn clay loam with slopes from 0 to 6 percent.

Wetlands

Four of the nine alternatives under consideration for the railway disposition may cause the disruption of small portions of wetland areas during the removal of rails, ties, ballast, and berms. Section 404 of the Clean Water Act requires that disturbances of wetland areas be minimized and mitigated to the extent possible.

Thank you again for your input. Please call or respond via fax or e-mail.

Very truly yours,

Ellsworth Air Force Base

2nd Lieutenant Nathan Shirey
28 CES/CEVP
Nathan.Shirey@Ellsworth.AF.Mil
Comm (605) 385-2685

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 28TH MISSION SUPPORT GROUP (ACC)
ELLSWORTH AIR FORCE BASE, SOUTH DAKOTA

June 5, 2003

Mr. John Miller
South Dakota Department of
Environment and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501

Dear Mr. Miller:

The Air Force is looking into the matter of the railway disposition for the Dakota, Minnesota and Eastern (DM&E) railroad section that is located on Ellsworth AFB. Preliminary information and analysis related to the proposed project is included in the following text. Please feel free to contact us with questions or comments.

Proposed Project Overview

This railway begins near the western end of the "Box Elder Passing Track" on the DM&E Railroad Corporation's right-of-way in Box Elder, SD. The railway under consideration traverses the Base and ends at the missile ramp located at the north end of the Ellsworth Air Force Base. The track in question consists of approximately 5.0 miles of "main" and "side" track that has been inactive for over 10 years due, in part, to the expense of repair and upkeep.

Threatened and Endangered Species

There are no federally listed species (i.e., whooping crane, least tern, black-footed ferret, bald eagle) located on Ellsworth AFB due to the lack of suitable habitat. Although the black-tailed prairie dog (*Cinemas ludovicianus)* has been identified as a candidate species for Federal listing (USFWS, South Dakota Field Office, January 2002), this species is not found in the project area.

Migratory bird species, Federally listed species, and sensitive or special-concern species (Swainson's hawk, the burrowing owl, the loggerhead shrike, and silver-haired bat) all have the potential to occur in this region. However, no designated or proposed critical habitats would be affected by the removal of the railway.

As part of the Bird/Wildlife Aircraft Strike Hazard (BASH) program much of the grass adjacent to the wetlands are mowed to discourage bird use and to reduce aircraft bird strikes.

Habitat and Predominant Vegetation

The entire railway is classified as disturbed habitat as a result of continuous mowing along the right-or-way. This area is dominated by Kentucky bluegrass (*Poa pratensis)* with occasional weedy species such as Field bindweed (*Convolvulus arvensis)*, Common dandelion (*Taraxacum officinale)*, Hairy crabgrass (*Digitaria sanquinalis)*, and some ornamental varieties of plants. Portions of the Base include areas that have been seeded with native prairie grasses, but are currently being mowed and therefore provide little or no habitat for sensitive species of plants or animals. The soil found in this area is a Nunn clay loam with slopes from 0 to 6 percent.

Wetlands

Four of the nine alternatives under consideration for the railway disposition may cause the disruption of small portions of wetland areas during the removal of rails, ties, ballast, and berms. Section 404 of the Clean Water Act requires that disturbances of wetland areas be minimized and mitigated to the extent possible.

Thank you again for your input. Please call or respond via fax or e-mail.

Very truly yours,

Ellsworth Air Force Base

2nd Lieutenant Nathan Shirey
28 CES/CEVP
Nathan.Shirey@Ellsworth.AF.Mil
Comm (605) 385-2685

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 28TH MISSION SUPPORT GROUP (ACC)
ELLSWORTH AIR FORCE BASE, SOUTH DAKOTA

June 5, 2003

Mr. Doug Backlund
South Dakota Department of Game, Fish, and Parks
412 West Missouri Avenue
Pierre, SD 57501

Dear Mr. Backlund:

The Air Force is looking into the matter of the railway disposition for the Dakota, Minnesota and Eastern (DM&E) railroad section that is located on Ellsworth AFB. Preliminary information and analysis related to the proposed project is included in the following text. Please feel free to contact us with questions or comments.

Proposed Project Overview

This railway begins near the western end of the "Box Elder Passing Track" on the DM&E Railroad Corporation's right-of-way in Box Elder, SD. The railway under consideration traverses the Base and ends at the missile ramp located at the north end of the Ellsworth Air Force Base. The track in question consists of approximately 5.0 miles of "main" and "side" track that has been inactive for over 10 years due, in part, to the expense of repair and upkeep.

Threatened and Endangered Species

There are no federally listed species (i.e., whooping crane, least tern, black-footed ferret, bald eagle) located on Ellsworth AFB due to the lack of suitable habitat. Although the black-tailed prairie dog (*Cinemas ludovicianus)* has been identified as a candidate species for Federal listing (USFWS, South Dakota Field Office, January 2002), this species is not found in the project area.

Migratory bird species, Federally listed species, and sensitive or special-concern species (Swainson's hawk, the burrowing owl, the loggerhead shrike, and silver-haired bat) all have the potential to occur in this region. However, no designated or proposed critical habitats would be affected by the removal of the railway.

As part of the Bird/Wildlife Aircraft Strike Hazard (BASH) program much of the grass adjacent to the wetlands are mowed to discourage bird use and to reduce aircraft bird strikes.

Habitat and Predominant Vegetation

The entire railway is classified as disturbed habitat as a result of continuous mowing along the right-of-way. This area is dominated by Kentucky bluegrass (*Poa pratensis)* with occasional weedy species such as Field bindweed (*Convolvulus arvensis)*, Common dandelion (*Taraxacum officinale)*, Hairy crabgrass (*Digitaria sanquinalis)*, and some ornamental varieties of plants. Portions of the Base include areas that have been seeded with native prairie grasses, but are currently being mowed and therefore provide little or no habitat for sensitive species of plants or animals. The soil found in this area is a Nunn clay loam with slopes from 0 to 6 percent.

Wetlands

Four of the nine alternatives under consideration for the railway disposition may cause the disruption of small portions of wetland areas during the removal of rails, ties, ballast, and berms. Section 404 of the Clean Water Act requires that disturbances of wetland areas be minimized and mitigated to the extent possible.

Thank you again for your input. Please call or respond via fax or e-mail.

Very truly yours,

Ellsworth Air Force Base

2nd Lieutenant Nathan Shirey
28 CES/CEVP
Nathan.Shirey@Ellsworth.AF.Mil
Comm (605) 385-2685

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 28TH MISSION SUPPORT GROUP (ACC)
ELLSWORTH AIR FORCE BASE, SOUTH DAKOTA

03-0540

This constitutes a report of the Department of the Interior prepared in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.). We have reviewed and have NO OBJECTION to this proposed project.

6/10/03 Date — Neil McPhillips acting Supervisor

June 5, 2003

Ms. Natalie Gates
U.S. Fish and Wildlife Service
South Dakota Ecological Services Field Office
420 South Garfield Avenue, Suite 400
Pierre, SD 57501

Dear Ms. Gates:

The Air Force is looking into the matter of the railway disposition for the Dakota, Minnesota and Eastern (DM&E) railroad section that is located on Ellsworth AFB. Preliminary information and analysis related to the proposed project is included in the following text. Please feel free to contact us with questions or comments.

Proposed Project Overview

This railway begins near the western end of the "Box Elder Passing Track" on the DM&E Railroad Corporation's right-of-way in Box Elder, SD. The railway under consideration traverses the Base and ends at the missile ramp located at the north end of the Ellsworth Air Force Base. The track in question consists of approximately 5.0 miles of "main" and "side" track that has been inactive for over 10 years due, in part, to the expense of repair and upkeep.

Threatened and Endangered Species

There are no federally listed species (i.e., whooping crane, least tern, black-footed ferret, bald eagle) located on Ellsworth AFB due to the lack of suitable habitat. Although the black-tailed prairie dog (*Cinemas ludovicianus)* has been identified as a candidate species for Federal listing (USFWS, South Dakota Field Office, January 2002), this species is not found in the project area.

Migratory bird species, Federally listed species, and sensitive or special-concern species (Swainson's hawk, the burrowing owl, the loggerhead shrike, and silver-haired bat) all have the potential to occur in this region. However, no designated or proposed critical habitats would be affected by the removal of the railway.

As part of the Bird/Wildlife Aircraft Strike Hazard (BASH) program much of the grass adjacent to the wetlands are mowed to discourage bird use and to reduce aircraft bird strikes.

Habitat and Predominant Vegetation

The entire railway is classified as disturbed habitat as a result of continuous mowing along the right-or-way. This area is dominated by Kentucky bluegrass (*Poa pratensis)* with occasional weedy species such as Field bindweed (*Convolvulus arvensis)*, Common dandelion (*Taraxacum officinale)*, Hairy crabgrass (*Digitaria sanquinalis)*, and some ornamental varieties of plants. Portions of the Base include areas that have been seeded with native prairie grasses, but are currently being mowed and therefore provide little or no habitat for sensitive species of plants or animals. The soil found in this area is a Nunn clay loam with slopes from 0 to 6 percent.

Wetlands

Four of the nine alternatives under consideration for the railway disposition may cause the disruption of small portions of wetland areas during the removal of rails, ties, ballast, and berms. Section 404 of the Clean Water Act requires that disturbances of wetland areas be minimized and mitigated to the extent possible.

Thank you again for your input. Please call or respond via fax or e-mail.

Very truly yours,

Ellsworth Air Force Base

Nathan S. Shirey, 2Lt

2nd Lieutenant Nathan Shirey
28 CES/CEVP
Nathan.Shirey@Ellsworth.AF.Mil
Comm (605) 385-2685

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 28TH MISSION SUPPORT GROUP (ACC)
ELLSWORTH AIR FORCE BASE, SOUTH DAKOTA

June 5, 2003

Mr. Jay D. Vogt
South Dakota State Historical Society
900 Governors Drive
Pierre, SD 57501-2217

Dear Mr. Vogt:

The Air Force is looking into the matter of the railway disposition for the Dakota, Minnesota and Eastern (DM&E) railroad section that is located on Ellsworth AFB. Preliminary information and analysis related to the proposed project is included in the following text. Please feel free to contact us with questions or comments.

Proposed Project Overview

This railway begins near the western end of the "Box Elder Passing Track" on the DM&E Railroad Corporation's right-of-way in Box Elder, SD. The railway under consideration traverses the Base and ends at the missile ramp located at the north end of the Ellsworth Air Force Base. The track in question consists of approximately 5.0 miles of "main" and "side" track that has been inactive for over 10 years due, in part, to the expense of repair and upkeep.

Threatened and Endangered Species

There are no federally listed species (i.e., whooping crane, least tern, black-footed ferret, bald eagle) located on Ellsworth AFB due to the lack of suitable habitat. Although the black-tailed prairie dog (*Cinemas ludovicianus)* has been identified as a candidate species for Federal listing (USFWS, South Dakota Field Office, January 2002), this species is not found in the project area.

Migratory bird species, Federally listed species, and sensitive or special-concern species (Swainson's hawk, the burrowing owl, the loggerhead shrike, and silver-haired bat) all have the potential to occur in this region. However, no designated or proposed critical habitats would be affected by the removal of the railway.

As part of the Bird/Wildlife Aircraft Strike Hazard (BASH) program much of the grass adjacent to the wetlands are mowed to discourage bird use and to reduce aircraft bird strikes.

Habitat and Predominant Vegetation

The entire railway is classified as disturbed habitat as a result of continuous mowing along the right-of-way. This area is dominated by Kentucky bluegrass (*Poa pratensis)* with occasional weedy species such as Field bindweed (*Convolvulus arvensis)*, Common dandelion (*Taraxacum officinale)*, Hairy crabgrass (*Digitaria sanquinalis)*, and some ornamental varieties of plants. Portions of the Base include areas that have been seeded with native prairie grasses, but are currently being mowed and therefore provide little or no habitat for sensitive species of plants or animals. The soil found in this area is a Nunn clay loam with slopes from 0 to 6 percent.

Wetlands

Four of the nine alternatives under consideration for the railway disposition may cause the disruption of small portions of wetland areas during the removal of rails, ties, ballast, and berms. Section 404 of the Clean Water Act requires that disturbances of wetland areas be minimized and mitigated to the extent possible.

Cultural Resources

A Cultural Resource Management Plan, prepared in cooperation with the South Dakota State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation was completed for the Ellsworth AFB in March 2002.

No prehistoric archaeological sites have been identified on Ellsworth AFB and a 1994 study concluded that there is limited opportunity for the discovery of an intact, significant archaeological site.

There are seven significant and eight potentially significant structures located on the Base as shown in the table below. The World War II Era properties retain substantial integrity and are eligible for listing on the National Register of Historic Places (NRHP). Three Cold War Era historic structures are also considered eligible for listing. The eight Cold War Era Luria wing hangars were identified as being potentially significant pending more detailed study of their remaining historic value because they are an important part of the military landscape at Ellsworth AFB. These eight buildings will be considered provisionally eligible for list on the NRHP.

STRUCTURES OF HISTORIC OR ARCHITECTURAL SIGNIFICANCE

Building Name	Building No.	Era	Status
Jet Engine Maintenance Shop	601	WWII	Significant
Ordinance Storage	6904	WWII	Significant
Small Arms Range	6905	WWII	Significant
Combat Arms Training Maintenance Building	6908	WWII	Significant
B-36 Aircraft Hangar	7504	Cold War	Significant
Segmented (Munitions) Magazine Storage	88106	Cold War	Significant
Segmented (Munitions) Magazine Storage	88289	Cold War	Significant
Luria Wing Hangars	7610	Cold War	Potentially Significant
Luria Wing Hangars	7612	Cold War	Potentially Significant
Luria Wing Hangars	7614	Cold War	Potentially Significant
Luria Wing Hangars	7616	Cold War	Potentially Significant
Luria Wing Hangars	7618	Cold War	Potentially Significant
Luria Wing Hangars	7620	Cold War	Potentially Significant
Luria Wing Hangars	7622	Cold War	Potentially Significant
Luria Wing Hangars	7624	Cold War	Potentially Significant

Thank you again for your input. Please call or respond via fax or e-mail.

Very truly yours,

Ellsworth Air Force Base

2nd Lieutenant Nathan Shirey
28 CES/CEVP
Nathan.Shirey@Ellsworth.AF.Mil
Comm (605) 385-2685

88020 ?

DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

September 25, 2003

2nd Lieutenant Nathan Shirey
28 CES/CEVP
2103 Scott Drive
Ellsworth AFB SD 57706

Dear Lieutenant Shirey:

The South Dakota Department of Environment and Natural Resources (DENR) has reviewed the Ellsworth AFB's proposed project concerning the disposition of a section of the DME railway and offers the following comments:

1. The department does not anticipate any adverse impacts to the air quality of the state. The Air Quality Program has no objections to this project.

2. The department does not anticipate any adverse impacts to drinking water of the state. The Drinking Water Program has no objections to this project.

3. The department does not anticipate any adverse waste management impacts. The Waste Management Program has no objections to this project. Construction debris and other solid waste generated during construction must be disposed of in a permitted solid waste facility. Please contact the Waste Management Program if you have any questions on solid waste disposal at (605) 773-3153.

4. A General Storm Water Permit for Construction Activities may be required. If you have any questions, please contact Stacy Reed at 1-800-SDSTORM (1-800-737-8676).

5. Best Management Practices (BMP) for sediment and erosion control should be incorporated into the planning, design, and construction of this project.

6. As was mentioned in your letter, if construction will result in fill being placed into wetlands or other surface water bodies, the U.S. Army Corps of Engineers must be contacted.

7. The Ground Water Quality Program of the South Dakota Department of Environment and Natural Resources has reviewed the above-referenced project for potential impacts to ground water quality. Based on the information submitted in your letter, the department does not anticipate adverse impacts to ground water quality by this project.

   However, there have been numerous spills on Ellsworth Air Force Base property. Please be aware of the possibility of encountering contaminated material. In the unlikely event that contamination is encountered during construction activities, Ellsworth AFB or its designated representative must report the contamination to the department at (605) 773-3296. Any contaminated soil encountered must be temporarily stockpiled and sampled to determine disposal requirements and the materials of construction through the contaminated area should be evaluated for chemical compatibility and adjusted accordingly.

If you have any questions concerning these comments, please contact me at the number listed below.

Sincerely,

John Miller

John Miller
Environmental Program Scientist
Surface Water Quality Program
(605) 773-3351

APPENDIX B

AIR QUALITY ANALYSIS

Table B-1. Vehicle Exhaust Emissions

					Emission Factors (lbs/HP-hr)						Air Emissions (tons)					
Equipment	**Power Output (HP)[a]**	**Number of vehicles**	**Load Factor**	**Hours of Operation**	**PM**	**PM_{10}**	**NO_X**	**SO_X**	**VOCs**	**CO**	**PM**	**PM_{10}**	**NO_X**	**SO_2**	**VOCs**	**CO**
D5 Bulldozer	100	1	0.590	160	0.0010	0.0010	0.0230	0.0020	0.0020	0.0110	0.0047	0.0047	0.1086	0.0094	0.0094	0.0519
Grader	175	1	0.575	160	0.0010	0.0010	0.0210	0.0020	0.0030	0.0080	0.0081	0.0081	0.1691	0.0161	0.0242	0.0644
Compactor	50	1	0.430	160	0.0010	0.0010	0.0200	0.0020	0.0020	0.0070	0.0017	0.0017	0.0344	0.0034	0.0034	0.0120
Crane	200	1	0.430	120	0.0004	0.0004	0.0103	0.0007	0.0007	0.0023	0.0019	0.0019	0.0532	0.0037	0.0037	0.0118
Bobcat w/Fork	50	1	0.465	120	0.0015	0.0015	0.0180	0.0020	0.0030	0.0220	0.0021	0.0021	0.0251	0.0028	0.0042	0.0307
Loader	130	1	0.465	120	0.0003	0.0003	0.0086	0.0006	0.0006	0.0049	0.0011	0.0011	0.0312	0.0022	0.0022	0.0179
Haul Truck	400	7	0.410	160	0.0010	0.0010	0.0200	0.0010	0.0030	0.0140	0.0918	0.0918	1.8368	0.0918	0.2755	1.2858
Water Truck	175	1	0.410	160	0.0004	0.0004	0.0086	0.0006	0.0006	0.0019	0.0025	0.0025	0.0494	0.0034	0.0034	0.0109
Pickup (EF=lbs/hr)	N/A[b]	1	0.410	160	0.0004	0.0004	0.0090	0.0000	0.0062	0.0695	0.0000	0.0000	0.0007	0.0000	0.0005	0.0056
Total											**0.1139**	**0.1139**	**2.3085**	**0.1329**	**0.3265**	**1.4909**

Source: (a) Horsepower ratings were derived from typical equipment ratings from SCAQMD (Table A9-8-C in the Handbook), and from the California Air Resources Board (ARB) website: (http://www.arb.ca.gov/msprog/mailouts/msc9925/msc9925e.pdf, Appendix E, Revised January 10, 2002).

(b) N/A = Data not available.

Table B-2. Emission Factors for Driving on Unpaved Roads

Pollutant	k (lbs/VMT)	Silt Content (%)	Vehicle Weight (tons)	Constant (a)	Constant (b)	Constant (c)	Soil Moisture (%)	Emissions (lbs)	Emissions (tons)
PM_{10}	2.6	0.15	20	0.8	0.4	0.3	0.03	0.294603212	0.346895282
PM	10	0.15	20	0.8	0.5	0.4	0.03	1.655944882	1.949875099

Source: AP-42, Section 13.2, January 1998.

Notes: (1) Emissions (tons) = (Emissions [lbs]*MVW)/ 2000, where: MVW = 2,355 lbs.

Table B-3. Bulldozing and Compacting

Pollutant	Silt Content (%)	Moisture (%)	Air Emissions (lbs/hr)	Hours of Operation	Air Emissions (tons)
PM	7.50	0.70	161.19	320	25.79
PM_{10}	7.50	0.70	120.89	320	19.34

Source: AP-42, Section 11.9, January 1995.

Notes: PM EF (lbs/hr) = $5.7\ (s)^{1.2}/M^{1.3}$, and PM_{10} EF (lbs/hr) = $0.75(5.7\ (s)^{1.2}/M^{1.3})$,
Where: s = silt content (%), and M = Moisture (%).

Table B-4. Grading

Pollutant	Mean Vehicle Speed (mph)	Distant Traveled (miles)	Emission Factor (lbs/VMT)	Air Emissions (tons)
PM	3	500	0.624	0.156
PM_{10}	3	500	0.374	0.094

Source: AP-42, Section 11.9, January 1995.

Notes: PM EF (lbs/VMT) = $0.04S^{2.5}$, and PM_{10} EF (lbs/VMT) = $0.6(0.04\ S^{2.5})$
Where: S = Mean vehicle speed, and VMT = Vehicle Mile.

Table B-5. Fugitive Dust

Pollutant	k (Particle Size)	U (Average Wind Speed) (mph)	M (Moisture Content) (%)	Fill (tons)	Emission Factor (lbs PM/ton)	Air Emissions (tons)
PM	0.74	8.4	0.70	7,800	12.7522994	49.73396784
PM_{10}	0.35	8.4	0.70	7,800	6.03149298	23.52282263

Source: AP-42, Section 13.2.4, Equation (1), January 1995.

Notes: $EF(lbs/ton) = k(0.0032)*(U/5)^{1.3}/(M/2)^{1.4}$.

Legend

- Installation Boundary
- Railroad Fill Area
- Railroad

N
W E
S

0.1 0.05 0 0.1

Scale in Miles

Figure B-1
Railroad Fill Area
Ellsworth Air Force Base, South Dakota

APPENDIX C

SOIL SAMPLING RESULTS

MIDCONTINENT
TESTING LABORATORIES, INC.

PROJECT: 52331.15.1010
DESCRIPTION: EAFB TERC

ACCOUNT NUMBER: W1220
DATE RECEIVED: 07/10/03
TIME RECEIVED: 13:40 PM
REPORT DATE: 07/15/03

SAMPLE MATRIX: WATER
TEST METHOD: Mod. 8015
REPORTED UNITS: mg/L

JOE ODEGAARD
EARTH TECH
P.O. BOX 721
BOX ELDER, SD 57719

HYDROCARBON REPORT

LAB NUMBER	SAMPLE SITE	SAMPLE DATE	SAMPLE TIME	EXTRACT DATE	TPH WASTE OIL	TPH DIESEL	NAPHTHALENE
20030707523	EQPT. BLANK	07/08/03	15:00 PM	07/10/03	.	<0.50	.
20030707621	LAB BLANK	/ /		07/10/03	.	<0.50	<0.020
20030707621S	LAB BLANK-SPIKE	/ /		07/10/03	.	81.%	74.%

COMMENTS

LAB# 20030707-	523	621-BLK	621-LCS
OTP(%RECOVERY)	87.	81.%	90.%

OTP is ortho-terphenyl the surrogate for the extractable TPH analysis. All diesel range hydrocarbons are reported under TPH/Diesel. The range was extended to include JP-4.

APPROVED BY: [signature]

DATE: 7-15-03

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

MIDCONTINENT
TESTING LABORATORIES, INC.

PROJECT: 52331.15.1010
DESCRIPTION: EAFB TERC

ACCOUNT NUMBER: W1220
DATE RECEIVED: 07/10/03
TIME RECEIVED: 13:40 PM
REPORT DATE: 07/23/03

SAMPLE MATRIX: SOIL
TEST METHOD: Mod. 8015
REPORTED UNITS: mg/KG

JOE ODEGAARD
EARTH TECH
P.O. BOX 721
BOX ELDER, SD 57719

HYDROCARBON REPORT

LAB NUMBER	SAMPLE SITE	SAMPLE DATE	SAMPLE TIME	EXTRACT DATE	TPH WASTE OIL	TPH DIESEL	NAPHTHALENE
20030709566	SS03 FL01	07/08/03	10:15 AM	07/14/03	.	92.	.
20030709567	SS03 FL02	07/08/03	10:25 AM	07/14/03	.	36.	.
20030709568	SS03 LD03	07/08/03	13:35 PM	07/14/03	.	<10.	.
20030709569	SS03 LD04	07/08/03	13:50 PM	07/14/03	.	15.	.
20030709570	SS03 LD01	07/08/03	14:20 PM	07/14/03	.	13.	.
20030709571	SS03 LD02	07/08/03	14:30 PM	07/14/03	.	2100.*	.
20030709661	LAB BLANK	/ /		07/14/03	.	<10.	.
20030709661S	LAB BLANK -SPIK	/ /		07/14/03	.	70.%	.

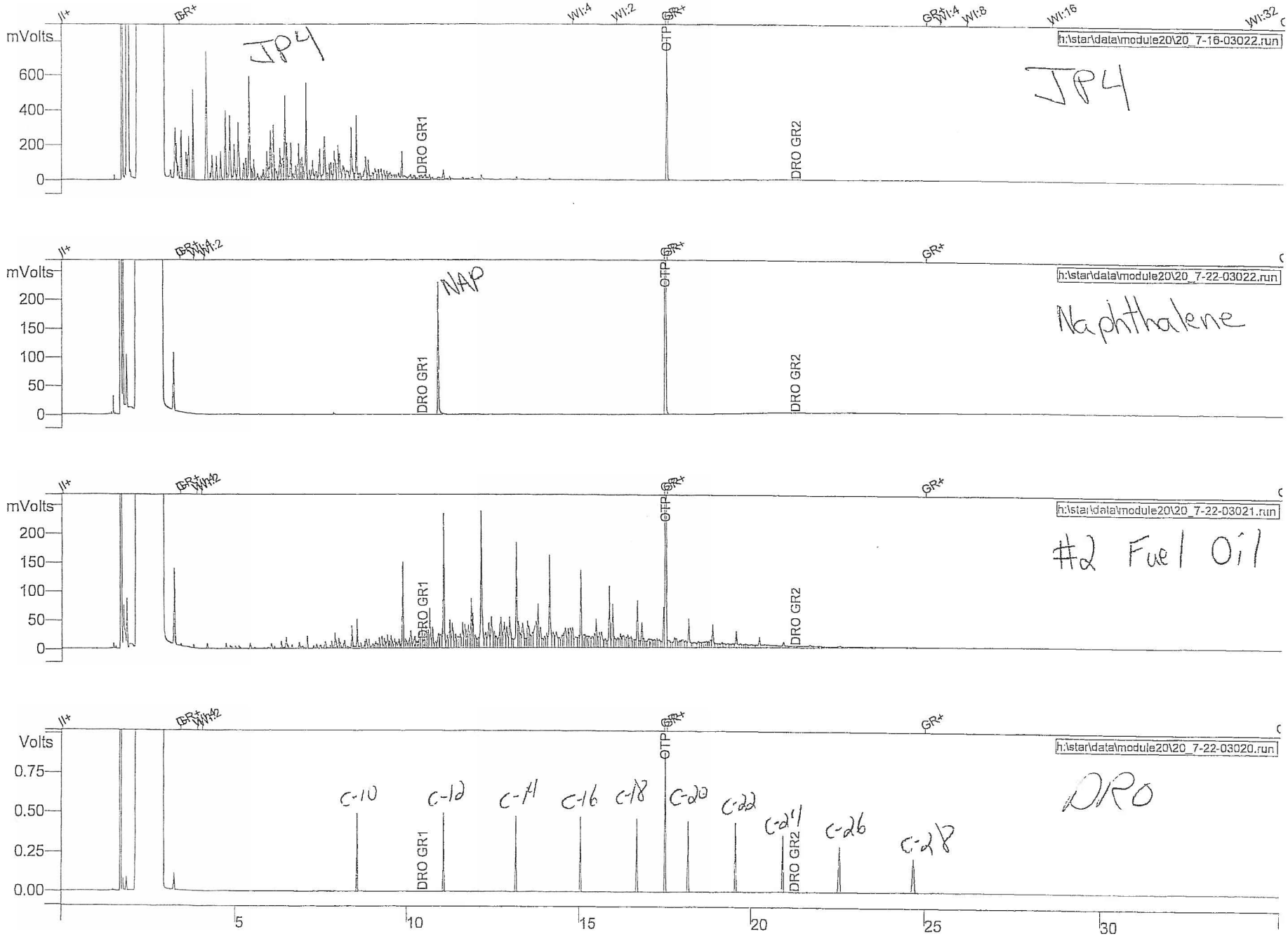
COMMENTS

LAB NUMBER 20030709- 566 567 568 569 570 571
OTP (% RECOVERY) 87. 85. 72. 90. 83. ***(OTP diluted out)
OTP is ortho-terphenyl the surrogate for the extractable TPH analysis.
All diesel range hydrocarbons are reported under TPH/Diesel. The range has been extended to include JP-4.
*The chromatograhic profile of SS03 LD02 indicated the presence of coal tar oil or creosote. Chromatograms have been provided for your reference.

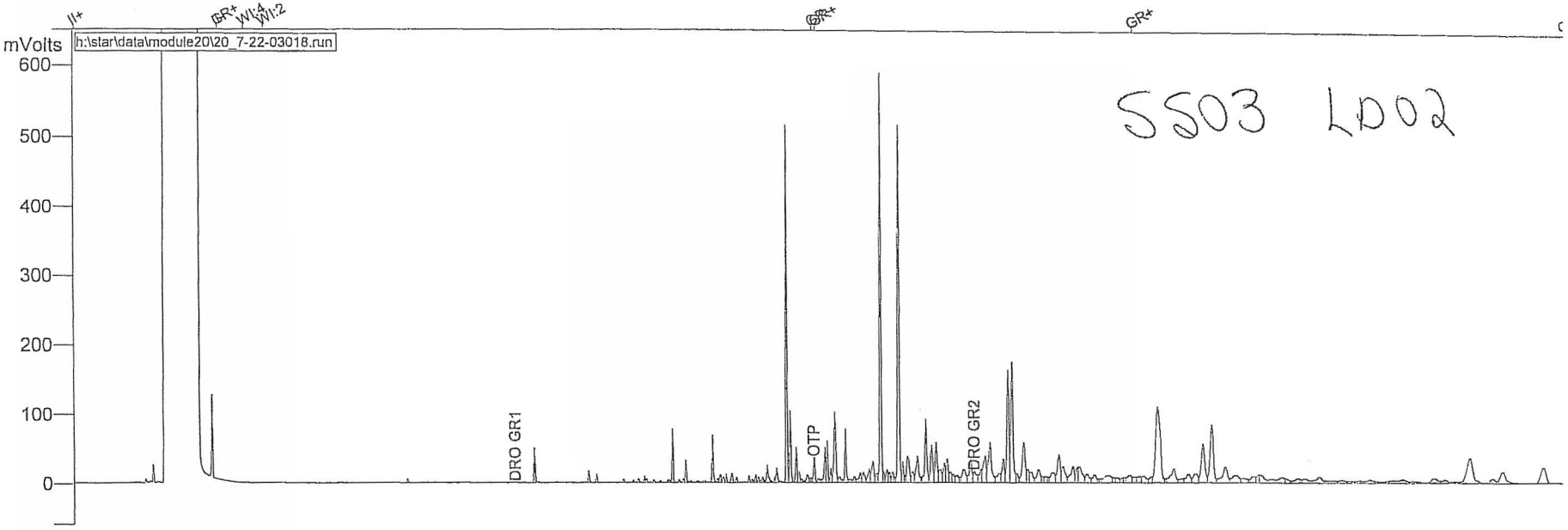
APPROVED BY: _____

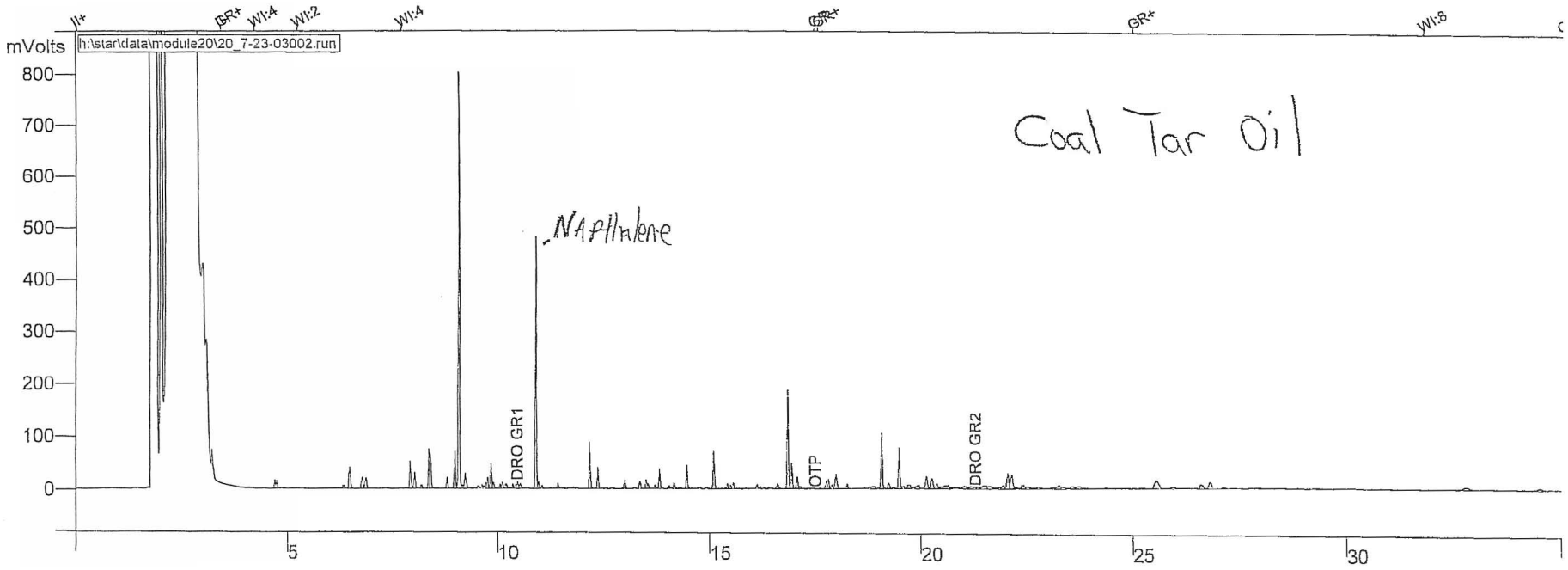
DATE: 7-23-03

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

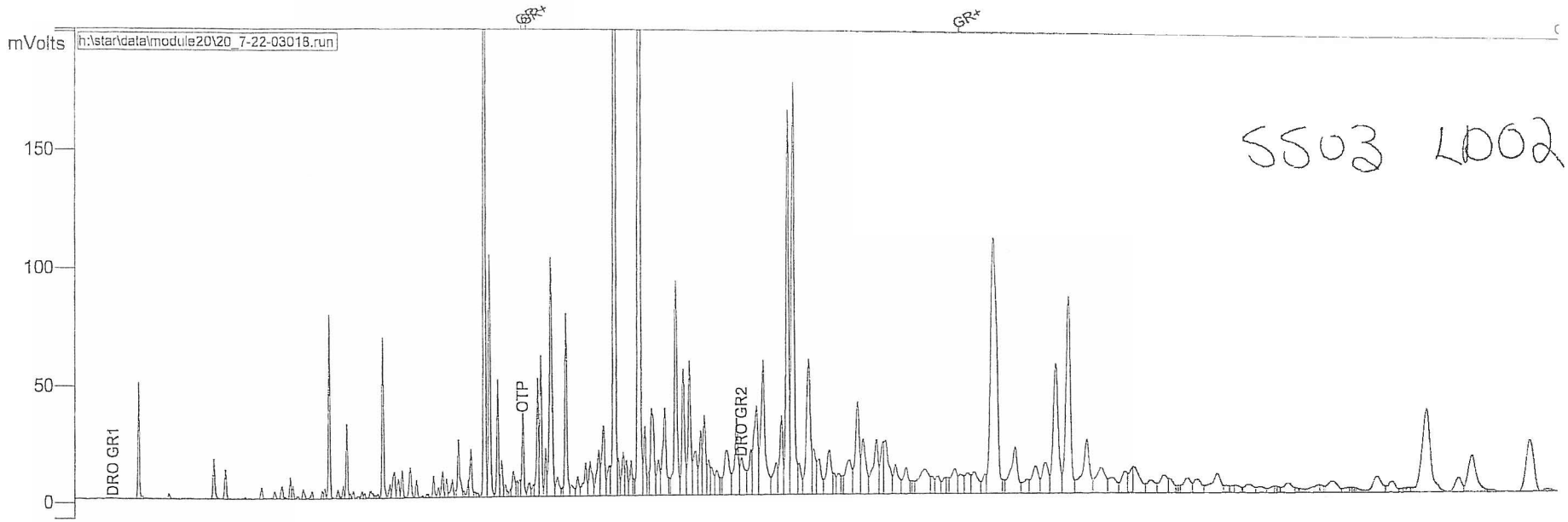

mVolts
600
400
200
0
JP4
DRO GR1
DRO GR2
h:\star\data\module20\20_7-16-03022.run
JP4
mVolts
200
150
100
50
0
NAP
DRO GR1
DRO GR2
h:\star\data\module20\20_7-22-03022.run
Naphthalene
mVolts
200
150
100
50
0
DRO GR1
DRO GR2
h:\star\data\module20\20_7-22-03021.run
#2 Fuel Oil
Volts
0.75
0.50
0.25
0.00
c-10
c-12
c-14
c-16
c-18
c-20
c-22
c-24
c-26
c-28
DRO GR1
DRO GR2
h:\star\data\module20\20_7-22-03020.run
DRO
5
10
15
20
25
30
Minutes

Full Scale

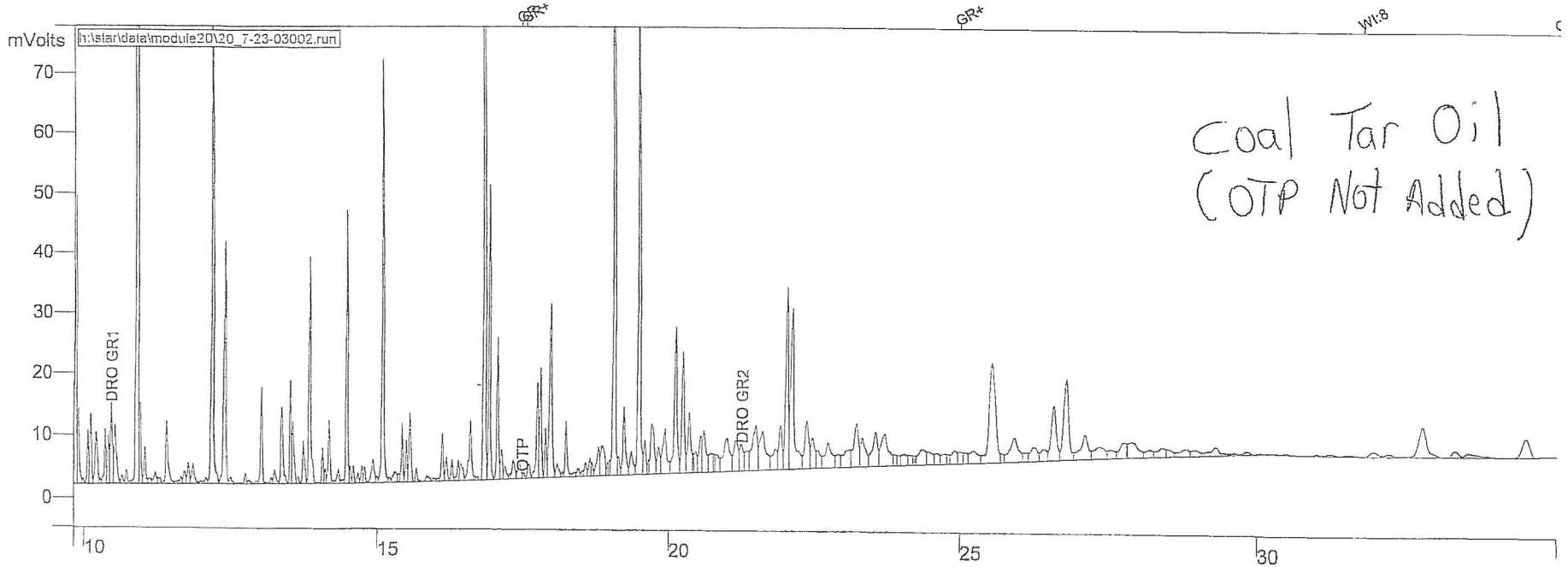

mVolts
h:\star\data\module20\20_7-22-03018.run
600
500
400
300
200
100
0
DRO GR1
OTP
DRO GR2
SS03 LD02


mVolts
h:\star\data\module20\20_7-23-03002.run
800
700
600
500
400
300
200
100
0
DRO GR1
Naphthalene
OTP
DRO GR2
Coal Tar Oil
5
10
15
20
25
30
Minutes

Zoom



5503 LD02



Coal Tar Oil
(OTP Not Added)

MIDCONTINENT
TESTING LABORATORIES, INC.

SAMPLE ID: SS03FL01
SAMPLE DATE: 7/8/03
ACCOUNT NUMBER: W1220
LAB NUMBER: 20030709566
DATE RECEIVED: 7/10/03
METHOD: MOD.8260
UNITS: mg/KG

Joe Odegaard
Earth Tech
P.O. Box 721
Box Elder, SD 57719

PARAMETER:	SS03FL01 mg/KG	LAB CONTROL SPIKE %REC	LAB BLANK mg/KG	DATE SAMPLE ANALYZED
BENZENE	<0.20	88.	<0.20	7/11/03
BROMOBENZENE	<0.20		<0.20	7/11/03
BROMOCHLOROMETHANE	<0.20		<0.20	7/11/03
BROMODICHLOROMETHANE	<0.20		<0.20	7/11/03
BROMOFORM	<0.20		<0.20	7/11/03
N-BUTYLBENZENE	<0.20		<0.20	7/11/03
SEC-BUTYLBENZENE	<0.20		<0.20	7/11/03
T-BUTYLBENZENE	<0.20		<0.20	7/11/03
CARBON TETRACHLORIDE	<0.20		<0.20	7/11/03
CHLOROBENZENE	<0.20	102.	<0.20	7/11/03
CHLOROFORM	<0.20		<0.20	7/11/03
2-CHLOROTOLUENE	<0.20		<0.20	7/11/03
4-CHLOROTOLUENE	<0.20		<0.20	7/11/03
DIBROMOCHLOROMETHANE	<0.20		<0.20	7/11/03
1,2-DIBROMO-3-CHLOROPROPANE	<1.0		<1.0	7/11/03
1,2-DIBROMOETHANE	<0.20		<0.20	7/11/03
DIBROMOMETHANE	<0.20		<0.20	7/11/03
1,2-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,3-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,4-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,1-DICHLOROETHANE	<0.20		<0.20	7/11/03
1,2-DICHLOROETHANE	<0.20		<0.20	7/11/03
1,1-DICHLOROETHENE	<0.20	90.	<0.20	7/11/03
CIS-1,2-DICHLOROETHENE	<0.20		<0.20	7/11/03
TRANS-1,2-DICHLOROETHENE	<0.20		<0.20	7/11/03
1,2-DICHLOROPROPANE	<0.20		<0.20	7/11/03
1,3-DICHLOROPROPANE	<0.20		<0.20	7/11/03
2,2-DICHLOROPROPANE	<1.0		<1.0	7/11/03
1,1-DICHLOROPROPENE	<0.20		<0.20	7/11/03

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

MIDCONTINENT
TESTING LABORATORIES, INC.

P.O. Box 721

SS03FL01
20030709566
PAGE2

PARAMETER:	SS03FL01 mg/KG	LAB CONTROL SPIKE %REC	LAB BLANK mg/KG	DATE SAMPLE ANALYZED
ETHYLBENZENE	<0.20		<0.20	7/11/03
HEXACHLOROBUTADIENE	<0.40		<0.40	7/11/03
CUMENE (ISOPROPYLBENZENE)	<0.20		<0.20	7/11/03
ISOPROPYLTOLUENE	<0.40		<0.40	7/11/03
METHYLENE CHLORIDE	<2.0		<2.0	7/11/03
NAPHTHALENE	<0.40		<0.40	7/11/03
N-PROPYLBENZENE	<0.20		<0.20	7/11/03
STYRENE	<0.20		<0.20	7/11/03
1,1,1,2-TETRACHLOROETHANE	<0.20		<0.20	7/11/03
1,1,2,2-TETRACHLOROETHANE	<0.20		<0.20	7/11/03
TETRACHLOROETHENE	<0.20		<0.20	7/11/03
TOLUENE	<0.20	101.	<0.20	7/11/03
1,2,3-TRICHLOROBENZENE	<0.20		<0.20	7/11/03
1,2,4-TRICHLOROBENZENE	<0.20		<0.20	7/11/03
1,1,1-TRICHLOROETHANE	<0.20		<0.20	7/11/03
1,1,2-TRICHLOROETHANE	<0.20		<0.20	7/11/03
TRICHLOROETHENE	<0.20	91.	<0.20	7/11/03
TRICHLOROFLUOROMETHANE	<0.20		<0.20	7/11/03
1,2,3-TRICHLOROPROPANE	<0.20		<0.20	7/11/03
1,2,4-TRIMETHYLBENZENE	<0.20		<0.20	7/11/03
1,3,5-TRIMETHYLBENZENE	<0.20		<0.20	7/11/03
TOTAL XYLENES	<0.40		<0.40	7/11/03
				RECOVERY LIMITS
SURROGATE RECOVERY	(%)	(%)	(%)	(%)
DIBROMOFLUOROMETHANE	92.	90.	92.	86-118
1,2-DICHLOROETHANEd-4	94.	92.	96.	80-120
$TOLUENE_{d-8}$	96.	102.	98.	85-115
4-BROMOFLUOROBENZENE	98.	100.	93.	80-120
DATAFILE: 030711-	13.MS	05.MS	10.MS	

Approved by: _____

Date: 7-16-03

COMMENTS:

KEY
MDL= METHOD DETECTION LIMIT
EQL= ESTIMATED QUANTITATION LIMIT, A MULTIPLE OF THE MDL
LCS = LAB CONTROL SPIKE, LAB WATER SPIKED WITH TARGET COMPOUNDS

MIDCONTINENT
TESTING LABORATORIES, INC.

SAMPLE ID: SS03FL02
SAMPLE DATE: 7/8/03
ACCOUNT NUMBER: W1220
LAB NUMBER: 20030709567
DATE RECEIVED: 7/10/03
METHOD: MOD.8260
UNITS: mg/KG

Joe Odegaard
Earth Tech
P.O. Box 721
Box Elder, SD 57719

PARAMETER:	SS03FL02 mg/KG	LAB CONTROL SPIKE %REC	LAB BLANK mg/KG	DATE SAMPLE ANALYZED
BENZENE	<0.20	88.	<0.20	7/11/03
BROMOBENZENE	<0.20		<0.20	7/11/03
BROMOCHLOROMETHANE	<0.20		<0.20	7/11/03
BROMODICHLOROMETHANE	<0.20		<0.20	7/11/03
BROMOFORM	<0.20		<0.20	7/11/03
N-BUTYLBENZENE	<0.20		<0.20	7/11/03
SEC-BUTYLBENZENE	<0.20		<0.20	7/11/03
T-BUTYLBENZENE	<0.20		<0.20	7/11/03
CARBON TETRACHLORIDE	<0.20		<0.20	7/11/03
CHLOROBENZENE	<0.20	102.	<0.20	7/11/03
CHLOROFORM	<0.20		<0.20	7/11/03
2-CHLOROTOLUENE	<0.20		<0.20	7/11/03
4-CHLOROTOLUENE	<0.20		<0.20	7/11/03
DIBROMOCHLOROMETHANE	<0.20		<0.20	7/11/03
1,2-DIBROMO-3-CHLOROPROPANE	<1.0		<1.0	7/11/03
1,2-DIBROMOETHANE	<0.20		<0.20	7/11/03
DIBROMOMETHANE	<0.20		<0.20	7/11/03
1,2-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,3-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,4-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,1-DICHLOROETHANE	<0.20		<0.20	7/11/03
1,2-DICHLOROETHANE	<0.20		<0.20	7/11/03
1,1-DICHLOROETHENE	<0.20	90.	<0.20	7/11/03
CIS-1,2-DICHLOROETHENE	<0.20		<0.20	7/11/03
TRANS-1,2-DICHLOROETHENE	<0.20		<0.20	7/11/03
1,2-DICHLOROPROPANE	<0.20		<0.20	7/11/03
1,3-DICHLOROPROPANE	<0.20		<0.20	7/11/03
2,2-DICHLOROPROPANE	<1.0		<1.0	7/11/03
1,1-DICHLOROPROPENE	<0.20		<0.20	7/11/03

MIDCONTINENT
TESTING LABORATORIES, INC.

P.O. Box 721

SS03FL02
20030709567
PAGE2

PARAMETER:	SS03FL02 mg/KG	LAB CONTROL SPIKE %REC	LAB BLANK mg/KG	DATE SAMPLE ANALYZED
ETHYLBENZENE	<0.20		<0.20	7/11/03
HEXACHLOROBUTADIENE	<0.40		<0.40	7/11/03
CUMENE (ISOPROPYLBENZENE)	<0.20		<0.20	7/11/03
ISOPROPYLTOLUENE	<0.40		<0.40	7/11/03
METHYLENE CHLORIDE	<2.0		<2.0	7/11/03
NAPHTHALENE	<0.40		<0.40	7/11/03
N-PROPYLBENZENE	<0.20		<0.20	7/11/03
STYRENE	<0.20		<0.20	7/11/03
1,1,1,2-TETRACHLOROETHANE	<0.20		<0.20	7/11/03
1,1,2,2-TETRACHLOROETHANE	<0.20		<0.20	7/11/03
TETRACHLOROETHENE	<0.20		<0.20	7/11/03
TOLUENE	<0.20	101.	<0.20	7/11/03
1,2,3-TRICHLOROBENZENE	<0.20		<0.20	7/11/03
1,2,4-TRICHLOROBENZENE	<0.20		<0.20	7/11/03
1,1,1-TRICHLOROETHANE	<0.20		<0.20	7/11/03
1,1,2-TRICHLOROETHANE	<0.20		<0.20	7/11/03
TRICHLOROETHENE	<0.20	91.	<0.20	7/11/03
TRICHLOROFLUOROMETHANE	<0.20		<0.20	7/11/03
1,2,3-TRICHLOROPROPANE	<0.20		<0.20	7/11/03
1,2,4-TRIMETHYLBENZENE	<0.20		<0.20	7/11/03
1,3,5-TRIMETHYLBENZENE	<0.20		<0.20	7/11/03
TOTAL XYLENES	<0.40		<0.40	7/11/03
				RECOVERY LIMITS
SURROGATE RECOVERY	(%)	(%)	(%)	(%)
DIBROMOFLUOROMETHANE	92.	90.	92.	86-118
1,2-DICHLOROETHANEd-4	92.	92.	96.	80-120
$TOLUENE_{d-8}$	102.	102.	98.	85-115
4-BROMOFLUOROBENZENE	102.	100.	93.	80-120
DATAFILE: 030711-	14.MS	05.MS	10.MS	

Approved by: _____

Date: 7-16-03

COMMENTS:

KEY
MDL= METHOD DETECTION LIMIT
EQL= ESTIMATED QUANTITATION LIMIT, A MULTIPLE OF THE MDL
LCS = LAB CONTROL SPIKE, LAB WATER SPIKED WITH TARGET COMPOUNDS

MIDCONTINENT
TESTING LABORATORIES, INC.

SAMPLE ID: SS03LD03
SAMPLE DATE: 7/8/03
ACCOUNT NUMBER: W1220
LAB NUMBER: 20030709568
DATE RECEIVED: 7/10/03
METHOD: MOD.8260
UNITS: mg/KG

Joe Odegaard
Earth Tech
P.O. Box 721
Box Elder, SD 57719

PARAMETER:	SS03LD03 mg/KG	LAB CONTROL SPIKE %REC	LAB BLANK mg/KG	DATE SAMPLE ANALYZED
BENZENE	<0.20	88.	<0.20	7/11/03
BROMOBENZENE	<0.20		<0.20	7/11/03
BROMOCHLOROMETHANE	<0.20		<0.20	7/11/03
BROMODICHLOROMETHANE	<0.20		<0.20	7/11/03
BROMOFORM	<0.20		<0.20	7/11/03
N-BUTYLBENZENE	<0.20		<0.20	7/11/03
SEC-BUTYLBENZENE	<0.20		<0.20	7/11/03
T-BUTYLBENZENE	<0.20		<0.20	7/11/03
CARBON TETRACHLORIDE	<0.20		<0.20	7/11/03
CHLOROBENZENE	<0.20	102.	<0.20	7/11/03
CHLOROFORM	<0.20		<0.20	7/11/03
2-CHLOROTOLUENE	<0.20		<0.20	7/11/03
4-CHLOROTOLUENE	<0.20		<0.20	7/11/03
DIBROMOCHLOROMETHANE	<0.20		<0.20	7/11/03
1,2-DIBROMO-3-CHLOROPROPANE	<1.0		<1.0	7/11/03
1,2-DIBROMOETHANE	<0.20		<0.20	7/11/03
DIBROMOMETHANE	<0.20		<0.20	7/11/03
1,2-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,3-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,4-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,1-DICHLOROETHANE	<0.20		<0.20	7/11/03
1,2-DICHLOROETHANE	<0.20		<0.20	7/11/03
1,1-DICHLOROETHENE	<0.20	90.	<0.20	7/11/03
CIS-1,2-DICHLOROETHENE	<0.20		<0.20	7/11/03
TRANS-1,2-DICHLOROETHENE	<0.20		<0.20	7/11/03
1,2-DICHLOROPROPANE	<0.20		<0.20	7/11/03
1,3-DICHLOROPROPANE	<0.20		<0.20	7/11/03
2,2-DICHLOROPROPANE	<1.0		<1.0	7/11/03
1,1-DICHLOROPROPENE	<0.20		<0.20	7/11/03

MIDCONTINENT
TESTING LABORATORIES, INC.

P.O. Box 721
SS03LD03
20030709568
PAGE2

PARAMETER:	SS03LD03 mg/KG	LAB CONTROL SPIKE %REC	LAB BLANK mg/KG	DATE SAMPLE ANALYZED
ETHYLBENZENE	<0.20		<0.20	7/11/03
HEXACHLOROBUTADIENE	<0.40		<0.40	7/11/03
CUMENE (ISOPROPYLBENZENE)	<0.20		<0.20	7/11/03
ISOPROPYLTOLUENE	<0.40		<0.40	7/11/03
METHYLENE CHLORIDE	<2.0		<2.0	7/11/03
NAPHTHALENE	<0.40		<0.40	7/11/03
N-PROPYLBENZENE	<0.20		<0.20	7/11/03
STYRENE	<0.20		<0.20	7/11/03
1,1,1,2-TETRACHLOROETHANE	<0.20		<0.20	7/11/03
1,1,2,2-TETRACHLOROETHANE	<0.20		<0.20	7/11/03
TETRACHLOROETHENE	<0.20		<0.20	7/11/03
TOLUENE	<0.20	101.	<0.20	7/11/03
1,2,3-TRICHLOROBENZENE	<0.20		<0.20	7/11/03
1,2,4-TRICHLOROBENZENE	<0.20		<0.20	7/11/03
1,1,1-TRICHLOROETHANE	<0.20		<0.20	7/11/03
1,1,2-TRICHLOROETHANE	<0.20		<0.20	7/11/03
TRICHLOROETHENE	<0.20	91.	<0.20	7/11/03
TRICHLOROFLUOROMETHANE	<0.20		<0.20	7/11/03
1,2,3-TRICHLOROPROPANE	<0.20		<0.20	7/11/03
1,2,4-TRIMETHYLBENZENE	<0.20		<0.20	7/11/03
1,3,5-TRIMETHYLBENZENE	<0.20		<0.20	7/11/03
TOTAL XYLENES	<0.40		<0.40	7/11/03
				RECOVERY LIMITS
SURROGATE RECOVERY	(%)	(%)	(%)	(%)
DIBROMOFLUOROMETHANE	91.	90.	92.	86-118
1,2-DICHLOROETHANEd-4	94.	92.	96.	80-120
$TOLUENE_{d-8}$	98.	102.	98.	85-115
4-BROMOFLUOROBENZENE	102.	100.	93.	80-120
DATAFILE: 030711-	15.MS	05.MS	10.MS	

Approved by: _____

Date: 7-16-03

COMMENTS:

KEY
MDL= METHOD DETECTION LIMIT
EQL= ESTIMATED QUANTITATION LIMIT, A MULTIPLE OF THE MDL
LCS = LAB CONTROL SPIKE, LAB WATER SPIKED WITH TARGET COMPOUNDS

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

MIDCONTINENT
TESTING LABORATORIES, INC.

SAMPLE ID: SS03LD04
SAMPLE DATE: 7/8/03
ACCOUNT NUMBER: W1220
LAB NUMBER: 20030709569
DATE RECEIVED: 7/10/03
METHOD: MOD.8260
UNITS: mg/KG

Joe Odegaard
Earth Tech
P.O. Box 721
Box Elder, SD 57719

PARAMETER:	SS03LD04 mg/KG	LAB CONTROL SPIKE %REC	LAB BLANK mg/KG	DATE SAMPLE ANALYZED
BENZENE	<0.20	88.	<0.20	7/11/03
BROMOBENZENE	<0.20		<0.20	7/11/03
BROMOCHLOROMETHANE	<0.20		<0.20	7/11/03
BROMODICHLOROMETHANE	<0.20		<0.20	7/11/03
BROMOFORM	<0.20		<0.20	7/11/03
N-BUTYLBENZENE	<0.20		<0.20	7/11/03
SEC-BUTYLBENZENE	<0.20		<0.20	7/11/03
T-BUTYLBENZENE	<0.20		<0.20	7/11/03
CARBON TETRACHLORIDE	<0.20		<0.20	7/11/03
CHLOROBENZENE	<0.20	102.	<0.20	7/11/03
CHLOROFORM	<0.20		<0.20	7/11/03
2-CHLOROTOLUENE	<0.20		<0.20	7/11/03
4-CHLOROTOLUENE	<0.20		<0.20	7/11/03
DIBROMOCHLOROMETHANE	<0.20		<0.20	7/11/03
1,2-DIBROMO-3-CHLOROPROPANE	<1.0		<1.0	7/11/03
1,2-DIBROMOETHANE	<0.20		<0.20	7/11/03
DIBROMOMETHANE	<0.20		<0.20	7/11/03
1,2-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,3-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,4-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,1-DICHLOROETHANE	<0.20		<0.20	7/11/03
1,2-DICHLOROETHANE	<0.20		<0.20	7/11/03
1,1-DICHLOROETHENE	<0.20	90.	<0.20	7/11/03
CIS-1,2-DICHLOROETHENE	<0.20		<0.20	7/11/03
TRANS-1,2-DICHLOROETHENE	<0.20		<0.20	7/11/03
1,2-DICHLOROPROPANE	<0.20		<0.20	7/11/03
1,3-DICHLOROPROPANE	<0.20		<0.20	7/11/03
2,2-DICHLOROPROPANE	<1.0		<1.0	7/11/03
1,1-DICHLOROPROPENE	<0.20		<0.20	7/11/03

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

MIDCONTINENT
TESTING LABORATORIES, INC.

P.O. Box 721

SS03LD04
20030709569
PAGE2

PARAMETER:	SS03LD04 mg/KG	LAB CONTROL SPIKE %REC	LAB BLANK mg/KG	DATE SAMPLE ANALYZED
ETHYLBENZENE	<0.20		<0.20	7/11/03
HEXACHLOROBUTADIENE	<0.40		<0.40	7/11/03
CUMENE (ISOPROPYLBENZENE)	<0.20		<0.20	7/11/03
ISOPROPYLTOLUENE	<0.40		<0.40	7/11/03
METHYLENE CHLORIDE	<2.0		<2.0	7/11/03
NAPHTHALENE	<0.40		<0.40	7/11/03
N-PROPYLBENZENE	<0.20		<0.20	7/11/03
STYRENE	<0.20		<0.20	7/11/03
1,1,1,2-TETRACHLOROETHANE	<0.20		<0.20	7/11/03
1,1,2,2-TETRACHLOROETHANE	<0.20		<0.20	7/11/03
TETRACHLOROETHENE	<0.20		<0.20	7/11/03
TOLUENE	<0.20	101.	<0.20	7/11/03
1,2,3-TRICHLOROBENZENE	<0.20		<0.20	7/11/03
1,2,4-TRICHLOROBENZENE	<0.20		<0.20	7/11/03
1,1,1-TRICHLOROETHANE	<0.20		<0.20	7/11/03
1,1,2-TRICHLOROETHANE	<0.20		<0.20	7/11/03
TRICHLOROETHENE	<0.20	91.	<0.20	7/11/03
TRICHLOROFLUOROMETHANE	<0.20		<0.20	7/11/03
1,2,3-TRICHLOROPROPANE	<0.20		<0.20	7/11/03
1,2,4-TRIMETHYLBENZENE	<0.20		<0.20	7/11/03
1,3,5-TRIMETHYLBENZENE	<0.20		<0.20	7/11/03
TOTAL XYLENES	<0.40		<0.40	7/11/03
				RECOVERY LIMITS
SURROGATE RECOVERY	(%)	(%)	(%)	(%)
DIBROMOFLUOROMETHANE	90.	90.	92.	86-118
1,2-DICHLOROETHANEd-4	91.	92.	96.	80-120
$TOLUENE_{d-8}$	103.	102.	98.	85-115
4-BROMOFLUOROBENZENE	98.	100.	93.	80-120
DATAFILE: 030711-	16.MS	05.MS	10.MS	

Approved by: _____

Date: 7-16-03

COMMENTS:

KEY
MDL= METHOD DETECTION LIMIT
EQL= ESTIMATED QUANTITATION LIMIT, A MULTIPLE OF THE MDL
LCS = LAB CONTROL SPIKE, LAB WATER SPIKED WITH TARGET COMPOUNDS

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

MIDCONTINENT
TESTING LABORATORIES, INC.

SAMPLE ID: SS03LD01
SAMPLE DATE: 7/8/03
ACCOUNT NUMBER: W1220
LAB NUMBER: 20030709570
DATE RECEIVED: 7/10/03
METHOD: MOD.8260
UNITS: mg/KG

Joe Odegaard
Earth Tech
P.O. Box 721
Box Elder, SD 57719

PARAMETER:	SS03LD01 mg/KG	LAB CONTROL SPIKE %REC	LAB BLANK mg/KG	DATE SAMPLE ANALYZED
BENZENE	<0.20	88.	<0.20	7/11/03
BROMOBENZENE	<0.20		<0.20	7/11/03
BROMOCHLOROMETHANE	<0.20		<0.20	7/11/03
BROMODICHLOROMETHANE	<0.20		<0.20	7/11/03
BROMOFORM	<0.20		<0.20	7/11/03
N-BUTYLBENZENE	<0.20		<0.20	7/11/03
SEC-BUTYLBENZENE	<0.20		<0.20	7/11/03
T-BUTYLBENZENE	<0.20		<0.20	7/11/03
CARBON TETRACHLORIDE	<0.20		<0.20	7/11/03
CHLOROBENZENE	<0.20	102.	<0.20	7/11/03
CHLOROFORM	<0.20		<0.20	7/11/03
2-CHLOROTOLUENE	<0.20		<0.20	7/11/03
4-CHLOROTOLUENE	<0.20		<0.20	7/11/03
DIBROMOCHLOROMETHANE	<0.20		<0.20	7/11/03
1,2-DIBROMO-3-CHLOROPROPANE	<1.0		<1.0	7/11/03
1,2-DIBROMOETHANE	<0.20		<0.20	7/11/03
DIBROMOMETHANE	<0.20		<0.20	7/11/03
1,2-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,3-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,4-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,1-DICHLOROETHANE	<0.20		<0.20	7/11/03
1,2-DICHLOROETHANE	<0.20		<0.20	7/11/03
1,1-DICHLOROETHENE	<0.20	90.	<0.20	7/11/03
CIS-1,2-DICHLOROETHENE	<0.20		<0.20	7/11/03
TRANS-1,2-DICHLOROETHENE	<0.20		<0.20	7/11/03
1,2-DICHLOROPROPANE	<0.20		<0.20	7/11/03
1,3-DICHLOROPROPANE	<0.20		<0.20	7/11/03
2,2-DICHLOROPROPANE	<1.0		<1.0	7/11/03
1,1-DICHLOROPROPENE	<0.20		<0.20	7/11/03

MIDCONTINENT
TESTING LABORATORIES, INC.

P.O. Box 721
SS03LD01
20030709570
PAGE2

PARAMETER:	SS03LD01 mg/KG	LAB CONTROL SPIKE %REC	LAB BLANK mg/KG	DATE SAMPLE ANALYZED
ETHYLBENZENE	<0.20		<0.20	7/11/03
HEXACHLOROBUTADIENE	<0.40		<0.40	7/11/03
CUMENE (ISOPROPYLBENZENE)	<0.20		<0.20	7/11/03
ISOPROPYLTOLUENE	<0.40		<0.40	7/11/03
METHYLENE CHLORIDE	<2.0		<2.0	7/11/03
NAPHTHALENE	<0.40		<0.40	7/11/03
N-PROPYLBENZENE	<0.20		<0.20	7/11/03
STYRENE	<0.20		<0.20	7/11/03
1,1,1,2-TETRACHLOROETHANE	<0.20		<0.20	7/11/03
1,1,2,2-TETRACHLOROETHANE	<0.20		<0.20	7/11/03
TETRACHLOROETHENE	<0.20		<0.20	7/11/03
TOLUENE	<0.20	101.	<0.20	7/11/03
1,2,3-TRICHLOROBENZENE	<0.20		<0.20	7/11/03
1,2,4-TRICHLOROBENZENE	<0.20		<0.20	7/11/03
1,1,1-TRICHLOROETHANE	<0.20		<0.20	7/11/03
1,1,2-TRICHLOROETHANE	<0.20		<0.20	7/11/03
TRICHLOROETHENE	<0.20	91.	<0.20	7/11/03
TRICHLOROFLUOROMETHANE	<0.20		<0.20	7/11/03
1,2,3-TRICHLOROPROPANE	<0.20		<0.20	7/11/03
1,2,4-TRIMETHYLBENZENE	<0.20		<0.20	7/11/03
1,3,5-TRIMETHYLBENZENE	<0.20		<0.20	7/11/03
TOTAL XYLENES	<0.40		<0.40	7/11/03
				RECOVERY LIMITS
SURROGATE RECOVERY	(%)	(%)	(%)	(%)
DIBROMOFLUOROMETHANE	94.	90.	92.	86-118
1,2-DICHLOROETHANEd-4	96.	92.	96.	80-120
$TOLUENE_{d-8}$	100.	102.	98.	85-115
4-BROMOFLUOROBENZENE	100.	100.	93.	80-120
DATAFILE: 030711-	17.MS	05.MS	10.MS	

Approved by: _____

Date: 7-16-03

COMMENTS:

KEY
MDL= METHOD DETECTION LIMIT
EQL= ESTIMATED QUANTITATION LIMIT, A MULTIPLE OF THE MDL
LCS = LAB CONTROL SPIKE, LAB WATER SPIKED WITH TARGET COMPOUNDS

2301 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

MIDCONTINENT
TESTING LABORATORIES, INC.

SAMPLE ID: SS03LD02
SAMPLE DATE: 7/8/03
ACCOUNT NUMBER: W1220
LAB NUMBER: 20030709571
DATE RECEIVED: 7/10/03
METHOD: MOD.8260
UNITS: mg/KG

Joe Odegaard
Earth Tech
P.O. Box 721
Box Elder, SD 57719

PARAMETER:	SS03LD02 mg/KG	LAB CONTROL SPIKE %REC	LAB BLANK mg/KG	DATE SAMPLE ANALYZED
BENZENE	<0.20	88.	<0.20	7/11/03
BROMOBENZENE	<0.20		<0.20	7/11/03
BROMOCHLOROMETHANE	<0.20		<0.20	7/11/03
BROMODICHLOROMETHANE	<0.20		<0.20	7/11/03
BROMOFORM	<0.20		<0.20	7/11/03
N-BUTYLBENZENE	<0.20		<0.20	7/11/03
SEC-BUTYLBENZENE	<0.20		<0.20	7/11/03
T-BUTYLBENZENE	<0.20		<0.20	7/11/03
CARBON TETRACHLORIDE	<0.20		<0.20	7/11/03
CHLOROBENZENE	<0.20	102.	<0.20	7/11/03
CHLOROFORM	<0.20		<0.20	7/11/03
2-CHLOROTOLUENE	<0.20		<0.20	7/11/03
4-CHLOROTOLUENE	<0.20		<0.20	7/11/03
DIBROMOCHLOROMETHANE	<0.20		<0.20	7/11/03
1,2-DIBROMO-3-CHLOROPROPANE	<1.0		<1.0	7/11/03
1,2-DIBROMOETHANE	<0.20		<0.20	7/11/03
DIBROMOMETHANE	<0.20		<0.20	7/11/03
1,2-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,3-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,4-DICHLOROBENZENE	<0.20		<0.20	7/11/03
1,1-DICHLOROETHANE	<0.20		<0.20	7/11/03
1,2-DICHLOROETHANE	<0.20		<0.20	7/11/03
1,1-DICHLOROETHENE	<0.20	90.	<0.20	7/11/03
CIS-1,2-DICHLOROETHENE	<0.20		<0.20	7/11/03
TRANS-1,2-DICHLOROETHENE	<0.20		<0.20	7/11/03
1,2-DICHLOROPROPANE	<0.20		<0.20	7/11/03
1,3-DICHLOROPROPANE	<0.20		<0.20	7/11/03
2,2-DICHLOROPROPANE	<1.0		<1.0	7/11/03
1,1-DICHLOROPROPENE	<0.20		<0.20	7/11/03

MIDCONTINENT
TESTING LABORATORIES, INC.

P.O. Box 721
SS03LD02
20030709571
PAGE2

PARAMETER:	SS03LD02 mg/KG	LAB CONTROL SPIKE %REC	LAB BLANK mg/KG	DATE SAMPLE ANALYZED
ETHYLBENZENE	<0.20		<0.20	7/11/03
HEXACHLOROBUTADIENE	<0.40		<0.40	7/11/03
CUMENE (ISOPROPYLBENZENE)	<0.20		<0.20	7/11/03
ISOPROPYLTOLUENE	<0.40		<0.40	7/11/03
METHYLENE CHLORIDE	<2.0		<2.0	7/11/03
NAPHTHALENE	<0.40		<0.40	7/11/03
N-PROPYLBENZENE	<0.20		<0.20	7/11/03
STYRENE	<0.20		<0.20	7/11/03
1,1,1,2-TETRACHLOROETHANE	<0.20		<0.20	7/11/03
1,1,2,2-TETRACHLOROETHANE	<0.20		<0.20	7/11/03
TETRACHLOROETHENE	<0.20		<0.20	7/11/03
TOLUENE	<0.20	101.	<0.20	7/11/03
1,2,3-TRICHLOROBENZENE	<0.20		<0.20	7/11/03
1,2,4-TRICHLOROBENZENE	<0.20		<0.20	7/11/03
1,1,1-TRICHLOROETHANE	<0.20		<0.20	7/11/03
1,1,2-TRICHLOROETHANE	<0.20		<0.20	7/11/03
TRICHLOROETHENE	<0.20	91.	<0.20	7/11/03
TRICHLOROFLUOROMETHANE	<0.20		<0.20	7/11/03
1,2,3-TRICHLOROPROPANE	<0.20		<0.20	7/11/03
1,2,4-TRIMETHYLBENZENE	<0.20		<0.20	7/11/03
1,3,5-TRIMETHYLBENZENE	<0.20		<0.20	7/11/03
TOTAL XYLENES	<0.40		<0.40	7/11/03
				RECOVERY LIMITS
SURROGATE RECOVERY	(%)	(%)	(%)	(%)
DIBROMOFLUOROMETHANE	91.	90.	92.	86-118
1,2-DICHLOROETHANEd-4	94.	92.	96.	80-120
$TOLUENE_{d-8}$	100.	102.	98.	85-115
4-BROMOFLUOROBENZENE	99.	100.	93.	80-120
DATAFILE: 030711-	18.MS	05.MS	10.MS	

Approved by: _____

Date: 7-16-03

COMMENTS:

KEY
MDL= METHOD DETECTION LIMIT
EQL= ESTIMATED QUANTITATION LIMIT, A MULTIPLE OF THE MDL
LCS = LAB CONTROL SPIKE, LAB WATER SPIKED WITH TARGET COMPOUNDS

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

MIDCONTINENT
TESTING LABORATORIES, INC.

SAMPLE ID: SS03LD01
SAMPLE DATE: 7/8/03
ACCOUNT NUMBER: W1220
LAB NUMBER: 20030709570
DATE RECEIVED: 7/10/03
METHOD: MOD.8260
UNITS: mg/KG

Joe Odegaard
Earth Tech
P.O. Box 721
Box Elder, SD 57719

PARAMETER:	MATRIX SPIKE %RECOVERY	MATRIX SPIKE DUP %RECOVERY	RPD	SPIKE RECOVERY CONTROL LIMITS LIMITS (%)	DATE SAMPLE ANALYZED
BENZENE	88.	88.	0.0	72-116	7/11/03
CHLOROBENZENE	101.	98.	3.0	68-127	7/11/03
1,1-DICHLOROETHENE	84.	89.	5.8	63-125	7/11/03
TOLUENE	96.	97.	1.0	73-123	7/11/03
TRICHLOROETHENE	89.	88.	1.1	67-121	7/11/03

SURROGATE RECOVERY	(%)	(%)	SURROGATE RECOVERY LIMITS (%)
DIBROMOFLUOROMETHANE	90.	90.	83-109
1,2-DICHLOROETHANEd-4	92.	92.	88-106
$TOLUENE_{d-8}$	101.	102.	92-111
4-BROMOFLUOROBENZENE	104.	104.	85-110
DATAFILE:030711-	06.MS	07.MS	

Approved by: [signature]

Date: 7-16-03

COMMENTS:

KEY
MDL= METHOD DETECTION LIMIT
EQL= ESTIMATED QUANTITATION LIMIT, A MULTIPLE OF THE MDL
ND = NOT DETECTED ABOVE THE EQL
J = ESTIMATED RESULTS, RESULT IS LESS THAN QUANTITION LIMIT.
MS/MSD = MATRIX SPIKE/MATRIX SPIKE DUPLICATE

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

MIDCONTINENT
TESTING LABORATORIES, INC.

PROJECT NUMBER: 52331.151010
SAMPLE ID: EQUIP.BLK
SAMPLE DATE: 7/8/03
ACCOUNT NUMBER: W1220
LAB NUMBER: 20030707523
DATE RECEIVED: 7/10/03
METHOD: MOD.8260
UNITS: ug/L

Joe Odegaard
Earth Tech
P.O. Box 721
Box Elder, SD 57719

DILUTION FACTOR PARAMETER:	1. EQUIP.BLK ug/L	SAMPLE EQL ug/L	LAB CONTROL SPIKE % RECOVERY	LAB BLANK ug/L	BLANK EQL ug/L	DATE SAMPLE ANALYZED
BENZENE	ND	1.0	97.	ND	1.0	7/10/03
BROMOBENZENE	ND	1.0		ND	1.0	7/10/03
BROMOCHLOROMETHANE	ND	1.0		ND	1.0	7/10/03
BROMODICHLOROMETHANE	ND	1.0		ND	1.0	7/10/03
BROMOFORM	ND	1.0		ND	1.0	7/10/03
BROMOMETHANE	ND	1.0		ND	1.0	7/10/03
N-BUTYLBENZENE	ND	1.0		ND	1.0	7/10/03
SEC-BUTYLBENZENE	ND	1.0		ND	1.0	7/10/03
T-BUTYLBENZENE	ND	1.0		ND	1.0	7/10/03
CARBON TETRACHLORIDE	ND	1.0		ND	1.0	7/10/03
CHLOROBENZENE	ND	1.0	98.	ND	1.0	7/10/03
CHLOROETHANE	ND	1.0		ND	1.0	7/10/03
CHLOROFORM	1.7	1.0		ND	1.0	7/10/03
CHLOROMETHANE	ND	2.0		ND	2.0	7/10/03
2-CHLOROTOLUENE	ND	1.0		ND	1.0	7/10/03
4-CHLOROTOLUENE	ND	1.0		ND	1.0	7/10/03
DIBROMOCHLOROMETHANE	ND	1.0		ND	1.0	7/10/03
1,2-DIBROMO-3-CHLOROPROPANE	ND	5.0		ND	5.0	7/10/03
1,2-DIBROMOETHANE	ND	1.0		ND	1.0	7/10/03
DIBROMOMETHANE	ND	1.0		ND	1.0	7/10/03
DICHLORODIFLUOROMETHANE	ND	1.0		ND	1.0	7/10/03
1,2-DICHLOROBENZENE	ND	1.0		ND	1.0	7/10/03
1,3-DICHLOROBENZENE	ND	1.0		ND	1.0	7/10/03
1,4-DICHLOROBENZENE	ND	1.0		ND	1.0	7/10/03
1,1-DICHLOROETHANE	ND	1.0		ND	1.0	7/10/03
1,2-DICHLOROETHANE	ND	1.0		ND	1.0	7/10/03
1,1-DICHLOROETHENE	ND	1.0	88.	ND	1.0	7/10/03
CIS-1,2-DICHLOROETHENE	ND	1.0		ND	1.0	7/10/03
TRANS-1,2-DICHLOROETHENE	ND	1.0		ND	1.0	7/10/03
1,2-DICHLOROPROPANE	ND	1.0		ND	1.0	7/10/03
1,3-DICHLOROPROPANE	ND	1.0		ND	1.0	7/10/03
2,2-DICHLOROPROPANE	ND	5.0		ND	5.0	7/10/03
1,1-DICHLOROPROPENE	ND	1.0		ND	1.0	7/10/03

MIDCONTINENT
TESTING LABORATORIES, INC.

20030707523
EQUIP.BLK
PAGE2

PARAMETER:	1. EQUIP.BLK ug/L	SAMPLE EQL ug/L	LAB CONTROL SPIKE % RECOVERY	LAB BLANK ug/L	EQL ug/L	DATE SAMPLE ANALYZED
ETHYLBENZENE	ND	1.0		ND	1.0	7/10/03
HEXACHLOROBUTADIENE	ND	2.0		ND	2.0	7/10/03
CUMENE (ISOPROPYLBENZENE)	ND	1.0		ND	1.0	7/10/03
ISOPROPYLTOLUENE	ND	1.0		ND	1.0	7/10/03
METHYLENE CHLORIDE	ND	5.0		ND	5.0	7/10/03
NAPHTHALENE	ND	5.0		ND	5.0	7/10/03
N-PROPYLBENZENE	ND	1.0		ND	1.0	7/10/03
STYRENE	ND	1.0		ND	1.0	7/10/03
1,1,1,2-TETRACHLOROETHANE	ND	1.0		ND	1.0	7/10/03
1,1,2,2-TETRACHLOROETHANE	ND	1.0		ND	1.0	7/10/03
TETRACHLOROETHENE	ND	1.0		ND	1.0	7/10/03
TOLUENE	ND	1.0	109.	ND	1.0	7/10/03
1,2,3-TRICHLOROBENZENE	ND	1.0		ND	1.0	7/10/03
1,2,4-TRICHLOROBENZENE	ND	1.0		ND	1.0	7/10/03
1,1,1-TRICHLOROETHANE	ND	1.0		ND	1.0	7/10/03
1,1,2-TRICHLOROETHANE	ND	1.0		ND	1.0	7/10/03
TRICHLOROETHENE	ND	1.0	90.	ND	1.0	7/10/03
TRICHLOROFLUOROMETHANE	ND	1.0		ND	1.0	7/10/03
1,2,3-TRICHLOROPROPANE	ND	1.0		ND	1.0	7/10/03
1,2,4-TRIMETHYLBENZENE	ND	1.0		ND	1.0	7/10/03
1,3,5-TRIMETHYLBENZENE	ND	2.0		ND	2.0	7/10/03
VINYL CHLORIDE	ND	2.0		ND	2.0	7/10/03
TOTAL XYLENES	ND	2.0		ND	2.0	7/10/03
						RECOVERY LIMITS
SURROGATE RECOVERY	(%)		(%)	(%)		(%)
DIBROMOFLUOROMETHANE	93.		91.	92.		86-118
1,2-DICHLOROETHANEd-4	95.		93.	91.		80-120
$TOLUENE_{d-8}$	101.		95.	99.		85-115
4-BROMOFLUOROBENZENE	101.		107.	100.		80-120
DATAFILE 030710-	21.MS		31.MS	19.MS		

Approved by: _____

Date: 7-16-03

COMMENTS: .
20030701610 Lab blank and lab control spike reported with sample.

KEY
MDL= METHOD DETECTION LIMIT
EQL= ESTIMATED QUANTITATION LIMIT, A MULTIPLE OF THE MDL
< = THE ANALYTE, IF PRESENT, IS BELOW THE QUANTITATION LIMIT FOLLOWING THE <.
J = ESTIMATED RESULTS, RESULT IS LESS THAN QUANTITION LIMIT.

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

MIDCONTINENT
TESTING LABORATORIES, INC.

PROJECT NUMBER: 52331.151010
SAMPLE ID: TRIP BLANK
SAMPLE DATE: 7/8/03
ACCOUNT NUMBER: W1220
LAB NUMBER: 20030701506
DATE RECEIVED: 7/10/03
METHOD: MOD.8260
UNITS: ug/L

Joe Odegaard
Earth Tech
P.O. Box 721
Box Elder, SD 57719

DILUTION FACTOR PARAMETER:	1. TRIP BLANK ug/L	SAMPLE EQL ug/L	LAB CONTROL SPIKE % RECOVERY	LAB BLANK ug/L	BLANK EQL ug/L	DATE SAMPLE ANALYZED
BENZENE	ND	1.0	97.	ND	1.0	7/10/03
BROMOBENZENE	ND	1.0		ND	1.0	7/10/03
BROMOCHLOROMETHANE	ND	1.0		ND	1.0	7/10/03
BROMODICHLOROMETHANE	ND	1.0		ND	1.0	7/10/03
BROMOFORM	ND	1.0		ND	1.0	7/10/03
BROMOMETHANE	ND	1.0		ND	1.0	7/10/03
N-BUTYLBENZENE	ND	1.0		ND	1.0	7/10/03
SEC-BUTYLBENZENE	ND	1.0		ND	1.0	7/10/03
T-BUTYLBENZENE	ND	1.0		ND	1.0	7/10/03
CARBON TETRACHLORIDE	ND	1.0		ND	1.0	7/10/03
CHLOROBENZENE	ND	1.0	98.	ND	1.0	7/10/03
CHLOROETHANE	ND	1.0		ND	1.0	7/10/03
CHLOROFORM	ND	1.0		ND	1.0	7/10/03
CHLOROMETHANE	ND	2.0		ND	2.0	7/10/03
2-CHLOROTOLUENE	ND	1.0		ND	1.0	7/10/03
4-CHLOROTOLUENE	ND	1.0		ND	1.0	7/10/03
DIBROMOCHLOROMETHANE	ND	1.0		ND	1.0	7/10/03
1,2-DIBROMO-3-CHLOROPROPANE	ND	5.0		ND	5.0	7/10/03
1,2-DIBROMOETHANE	ND	1.0		ND	1.0	7/10/03
DIBROMOMETHANE	ND	1.0		ND	1.0	7/10/03
DICHLORODIFLUOROMETHANE	ND	1.0		ND	1.0	7/10/03
1,2-DICHLOROBENZENE	ND	1.0		ND	1.0	7/10/03
1,3-DICHLOROBENZENE	ND	1.0		ND	1.0	7/10/03
1,4-DICHLOROBENZENE	ND	1.0		ND	1.0	7/10/03
1,1-DICHLOROETHANE	ND	1.0		ND	1.0	7/10/03
1,2-DICHLOROETHANE	ND	1.0		ND	1.0	7/10/03
1,1-DICHLOROETHENE	ND	1.0	88.	ND	1.0	7/10/03
CIS-1,2-DICHLOROETHENE	ND	1.0		ND	1.0	7/10/03
TRANS-1,2-DICHLOROETHENE	ND	1.0		ND	1.0	7/10/03
1,2-DICHLOROPROPANE	ND	1.0		ND	1.0	7/10/03
1,3-DICHLOROPROPANE	ND	1.0		ND	1.0	7/10/03
2,2-DICHLOROPROPANE	ND	5.0		ND	5.0	7/10/03
1,1-DICHLOROPROPENE	ND	1.0		ND	1.0	7/10/03

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

MIDCONTINENT
TESTING LABORATORIES, INC.

20030701506
TRIP BLANK
PAGE2

PARAMETER:	1. TRIP BLANK ug/L	SAMPLE EQL ug/L	LAB CONTROL SPIKE % RECOVERY	LAB BLANK ug/L	EQL ug/L	DATE SAMPLE ANALYZED
ETHYLBENZENE	ND	1.0		ND	1.0	7/10/03
HEXACHLOROBUTADIENE	ND	2.0		ND	2.0	7/10/03
CUMENE (ISOPROPYLBENZENE)	ND	1.0		ND	1.0	7/10/03
ISOPROPYLTOLUENE	ND	1.0		ND	1.0	7/10/03
METHYLENE CHLORIDE	ND	5.0		ND	5.0	7/10/03
NAPHTHALENE	ND	5.0		ND	5.0	7/10/03
N-PROPYLBENZENE	ND	1.0		ND	1.0	7/10/03
STYRENE	ND	1.0		ND	1.0	7/10/03
1,1,1,2-TETRACHLOROETHANE	ND	1.0		ND	1.0	7/10/03
1,1,2,2-TETRACHLOROETHANE	ND	1.0		ND	1.0	7/10/03
TETRACHLOROETHENE	ND	1.0		ND	1.0	7/10/03
TOLUENE	ND	1.0	109.	ND	1.0	7/10/03
1,2,3-TRICHLOROBENZENE	ND	1.0		ND	1.0	7/10/03
1,2,4-TRICHLOROBENZENE	ND	1.0		ND	1.0	7/10/03
1,1,1-TRICHLOROETHANE	ND	1.0		ND	1.0	7/10/03
1,1,2-TRICHLOROETHANE	ND	1.0		ND	1.0	7/10/03
TRICHLOROETHENE	ND	1.0	90.	ND	1.0	7/10/03
TRICHLOROFLUOROMETHANE	ND	1.0		ND	1.0	7/10/03
1,2,3-TRICHLOROPROPANE	ND	1.0		ND	1.0	7/10/03
1,2,4-TRIMETHYLBENZENE	ND	1.0		ND	1.0	7/10/03
1,3,5-TRIMETHYLBENZENE	ND	2.0		ND	2.0	7/10/03
VINYL CHLORIDE	ND	2.0		ND	2.0	7/10/03
TOTAL XYLENES	ND	2.0		ND	2.0	7/10/03
						RECOVERY LIMITS
SURROGATE RECOVERY	(%)		(%)	(%)		(%)
DIBROMOFLUOROMETHANE	94.		91.	92.		86-118
1,2-DICHLOROETHANEd-4	94.		93.	91.		80-120
$TOLUENE_{d-8}$	100.		95.	99.		85-115
4-BROMOFLUOROBENZENE	100.		107.	100.		80-120
DATAFILE 030710-	20.MS		31.MS	19.MS		

Approved by: _____

Date: 7-16-03

COMMENTS: 20030701610 Lab blank and lab control spike reported with sample.

KEY
MDL= METHOD DETECTION LIMIT
EQL= ESTIMATED QUANTITATION LIMIT, A MULTIPLE OF THE MDL
< = THE ANALYTE, IF PRESENT, IS BELOW THE QUANTITATION LIMIT FOLLOWING THE <.
J = ESTIMATED RESULTS, RESULT IS LESS THAN QUANTITION LIMIT.

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

MIDCONTINENT
TESTING LABORATORIES, INC.

PROJECT NUMBER: 53039.011010
SAMPLE ID: MW030401-MS/MSD
SAMPLE DATE: 6/30/03
ACCOUNT NUMBER: W1220
LAB NUMBER: 20030701501-MS/MSD
DATE RECEIVED: 7/1/03
METHOD: MOD.8260
UNITS: PERCENT RECOVERY

Joe Odegaard
Earth Tech
P.O. Box 721
Box Elder, SD 57719

PARAMETER:	MW030401 MATRIX SPIKE %RECOVERY	MW030401 MATRIX SPIKE DUP %RECOVERY	RPD	SPIKE RECOVERY CONTROL LIMITS LIMITS (%)
BENZENE	101.	101.	0.0	72-116
CHLOROBENZENE	110.	106.	3.7	68-127
1,1-DICHLOROETHENE	105.	106.	0.9	63-125
TOLUENE	106.	101.	4.8	73-123
TRICHLOROETHENE	112.	102.	9.3	67-121

SURROGATE RECOVERY	(%)	(%)	SURROGATE RECOVERY LIMITS (%)
DIBROMOFLUOROMETHANE	92.	93.	83-109
1,2-DICHLOROETHANEd-4	95.	94.	88-106
$TOLUENE_{d-8}$	98.	100.	92-111
4-BROMOFLUOROBENZENE	101.	101.	85-110
DATAFILE:030710-	29.MS	30.MS	

Approved by: _____

Date: 7-16-03

COMMENTS:

KEY
MDL= METHOD DETECTION LIMIT
EQL= ESTIMATED QUANTITATION LIMIT, A MULTIPLE OF THE MDL
ND = NOT DETECTED ABOVE THE EQL
J = ESTIMATED RESULTS, RESULT IS LESS THAN QUANTITION LIMIT.
MS/MSD = MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MIDCONTINENT
TESTING LABORATORIES, INC.

SAMPLE NAME: EQPT BLK
DESCRIPTION:
SAMPLE DATE: 07/08/03
SAMPLE TIME: 03:00 PM
SAMPLED BY:

JOE ODEGAARD
EARTH TECH
P.O. BOX 721
BOX ELDER, SD 57719

ACCOUNT NUMBER: W1220
LAB NUMBER: 20030707523
DATE RECEIVED: 07/10/03
TIME RECEIVED: 01:40 PM
REPORT DATE: 07/18/03

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	.
Hardness	.
PH	.
Solids, Dissolved, mg/l	.
Solids, Suspended, mg/l	.
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Acidity	.
Alkalinity	.
Bicarbonate	.
Carbonate, mg/l	.
Chloride, mg/l	.
Cyanide, Total, mg/l	.
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Fluoride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	.
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	.

METALS mg/l	DISSOLVED	TOTAL
Aluminum	.	.
Antimony	.	.
Arsenic	.	<0.005
Barium	.	0.040
Beryllium	.	.
Boron	.	.
Cadmium	.	<0.001
Calcium	.	.
Chromium	.	<0.001
Cobalt	.	.
Copper	.	.
Gold	.	.
Iron	.	.
Lead	.	0.009
Lithium	.	.
Magnesium	.	.
Manganese	.	.
Mercury	.	<0.0002
Molybdenum	.	.
Nickel	.	.
Potassium	.	.
Selenium	.	<0.005
Silicon	.	.
Silver	.	0.001
Sodium	.	.
Strontium	.	.
Vanadium	.	.
Zinc	.	.

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

APPROVED BY:

DATE: 7-18-03

MIDCONTINENT
TESTING LABORATORIES, INC.

SAMPLE NAME: SS03 LD03
DESCRIPTION:
SAMPLE DATE: 07/08/03
SAMPLE TIME: 01:35 PM
SAMPLED BY:

JOE ODEGAARD
EARTH TECH
P.O. BOX 721
BOX ELDER, SD 57719

ACCOUNT NUMBER: W1220
LAB NUMBER: 20030709568
DATE RECEIVED: 07/10/03
TIME RECEIVED: 01:40 PM
REPORT DATE: 07/21/03

TOTAL METALS BY 3050, REPORTED mg/KG;

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	.
Hardness	.
PH	.
Solids, Dissolved, mg/l	.
Solids, Suspended, mg/l	.
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Acidity	.
Alkalinity	.
Bicarbonate	.
Carbonate, mg/l	.
Chloride, mg/l	.
Cyanide, Total, mg/l	.
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Fluoride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	.
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	.

METALS mg/l	DISSOLVED	TOTAL
Aluminum	.	.
Antimony	.	.
Arsenic	.	9.85
Barium	.	478.
Beryllium	.	.
Boron	.	.
Cadmium	.	0.900
Calcium	.	.
Chromium	.	0.925
Cobalt	.	.
Copper	.	.
Gold	.	.
Iron	.	.
Lead	.	11.5
Lithium	.	.
Magnesium	.	.
Manganese	.	.
Mercury	.	0.0285
Molybdenum	.	.
Nickel	.	.
Potassium	.	.
Selenium	.	1.23
Silicon	.	.
Silver	.	0.100
Sodium	.	.
Strontium	.	.
Vanadium	.	.
Zinc	.	.

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

APPROVED BY: [signature]

DATE: 7-21-03

MIDCONTINENT
TESTING LABORATORIES, INC.

SAMPLE NAME: SS03 LD04
DESCRIPTION:
SAMPLE DATE: 07/08/03
SAMPLE TIME: 01:50 PM
SAMPLED BY:

JOE ODEGAARD
EARTH TECH
P.O. BOX 721
BOX ELDER, SD 57719

ACCOUNT NUMBER: W1220
LAB NUMBER: 20030709569
DATE RECEIVED: 07/10/03
TIME RECEIVED: 01:40 PM
REPORT DATE: 07/21/03

TOTAL METALS BY 3050, REPORTED mg/KG;

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	.
Hardness	.
PH	.
Solids, Dissolved, mg/l	.
Solids, Suspended, mg/l	.
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Acidity	.
Alkalinity	.
Bicarbonate	.
Carbonate, mg/l	.
Chloride, mg/l	.
Cyanide, Total, mg/l	.
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Fluoride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	.
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	.

METALS mg/l	DISSOLVED	TOTAL
Aluminum	.	.
Antimony	.	.
Arsenic	.	0.775
Barium	.	96.0
Beryllium	.	.
Boron	.	.
Cadmium	.	0.250
Calcium	.	.
Chromium	.	0.350
Cobalt	.	.
Copper	.	.
Gold	.	.
Iron	.	.
Lead	.	11.3
Lithium	.	.
Magnesium	.	.
Manganese	.	.
Mercury	.	<0.0100
Molybdenum	.	.
Nickel	.	.
Potassium	.	.
Selenium	.	0.850
Silicon	.	.
Silver	.	<0.125
Sodium	.	.
Strontium	.	.
Vanadium	.	.
Zinc	.	.

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

APPROVED BY: [signature]

DATE: 7-21-03

MIDCONTINENT
TESTING LABORATORIES, INC.

SAMPLE NAME: SS03 LD01
DESCRIPTION:
SAMPLE DATE: 07/08/03
SAMPLE TIME: 02:20 PM
SAMPLED BY:

JOE ODEGAARD
EARTH TECH
P.O. BOX 721
BOX ELDER, SD 57719

ACCOUNT NUMBER: W1220
LAB NUMBER: 20030709570
DATE RECEIVED: 07/10/03
TIME RECEIVED: 01:40 PM
REPORT DATE: 07/21/03

TOTAL METALS BY 3050, REPORTED mg/KG;

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	.
Hardness	.
PH	.
Solids, Dissolved, mg/l	.
Solids, Suspended, mg/l	.
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Acidity	.
Alkalinity	.
Bicarbonate	.
Carbonate, mg/l	.
Chloride, mg/l	.
Cyanide, Total, mg/l	.
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Fluoride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	.
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	.

METALS mg/l	DISSOLVED	TOTAL
Aluminum	.	.
Antimony	.	.
Arsenic	.	6.75
Barium	.	363.
Beryllium	.	.
Boron	.	.
Cadmium	.	0.100
Calcium	.	.
Chromium	.	0.475
Cobalt	.	.
Copper	.	.
Gold	.	.
Iron	.	.
Lead	.	3.58
Lithium	.	.
Magnesium	.	.
Manganese	.	.
Mercury	.	0.0480
Molybdenum	.	.
Nickel	.	.
Potassium	.	.
Selenium	.	0.550
Silicon	.	.
Silver	.	.050
Sodium	.	.
Strontium	.	.
Vanadium	.	.
Zinc	.	.

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

APPROVED BY: [signature]

DATE: 7-21-03

MIDCONTINENT
TESTING LABORATORIES, INC.

SAMPLE NAME: SS03 LD02
DESCRIPTION:
SAMPLE DATE: 07/08/03
SAMPLE TIME: 02:30 PM
SAMPLED BY:

JOE ODEGAARD
EARTH TECH
P.O. BOX 721
BOX ELDER, SD 57719

ACCOUNT NUMBER: W1220
LAB NUMBER: 20030709571
DATE RECEIVED: 07/10/03
TIME RECEIVED: 01:40 PM
REPORT DATE: 07/21/03

TOTAL METALS BY 3050, REPORTED mg/KG;

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	.
Hardness	.
PH	.
Solids, Dissolved, mg/l	.
Solids, Suspended, mg/l	.
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Acidity	.
Alkalinity	.
Bicarbonate	.
Carbonate, mg/l	.
Chloride, mg/l	.
Cyanide, Total, mg/l	.
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Fluoride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	.
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	.

METALS mg/l	DISSOLVED	TOTAL
Aluminum	.	.
Antimony	.	.
Arsenic	.	6.30
Barium	.	455.
Beryllium	.	.
Boron	.	.
Cadmium	.	5.53
Calcium	.	.
Chromium	.	2.40
Cobalt	.	.
Copper	.	.
Gold	.	.
Iron	.	.
Lead	.	273.
Lithium	.	.
Magnesium	.	.
Manganese	.	.
Mercury	.	0.1860
Molybdenum	.	.
Nickel	.	.
Potassium	.	.
Selenium	.	0.475
Silicon	.	.
Silver	.	0.100
Sodium	.	.
Strontium	.	.
Vanadium	.	.
Zinc	.	.

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

APPROVED BY: [signature]

DATE: 7-21-03

SEVERN TRENT STL

ANALYTICAL REPORT

Ellsworth AFB
Project# 52331.15.1010

Lot # D3G100364

Cathy Larson

Earth Tech

STL DENVER

Karen Kuoppala
Project Manager

July 31, 2003

Severn Trent Laboratories, Inc.
STL Denver • 4955 Yarrow Street, Arvada, CO 80002
Tel 303 736 0100 Fax 303 431 7171 • www.stl-inc.com

Table Of Contents

Standard Deliverables with Supporting Documentation

Report Contents	Number of Pages

Standard Deliverables

*(The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.)*

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Methods Summary
- Method/Analyst Summary
- Lot Sample Summary
- Analytical Results
- QC Data Association Summary
- QC Sample Results
- Chain-of-Custody

Supporting Documentation

(Note: A one-page "Description of Supporting Documentation" is provided at the beginning of this section.).

	Check below when supporting documentation is present.
• Volatile GC/MS	
• Semivolatile GC/MS	
• Volatile GC	
• Semivolatile GC	
• LC/MS or HPLC	
• Metals	
• General Chemistry	
• Subcontracted Data	

Project Narrative
(D3G100364)

With the exception of the below mentioned anomalies, standard analytical protocols were followed in the analysis of the samples. All laboratory QC samples analyzed in conjunction with the samples in this project were within established control limits with any exceptions noted.

The test results presented in this report meet all requirements of NELAC and any exceptions are noted. This report shall not be reproduced, except in full, without written permission from the laboratory.

Sample Receipt
On July 10, 2003 eight samples, one equipment blank, and one trip blank were received under chain of custody at STL Denver. The samples were received at a temperature of 3.7°C.

As per client request, the trip blank received was not analyzed because volatile analyses were not requested on the samples.

GC/MS Semivolatile Organics, SW846 8270C
Sample D3G110364-008 was analyzed at a dilution due to the high concentrations of target compounds in the sample. As a result of the dilution the surrogate recoveries could not be calculated. However, the sample was analyzed undiluted as well and the results from both analyses are reported. The results in the undiluted analysis that exceed the calibration range are flagged "E".

Due to an oversight in the laboratory, the LCS/LCSD associated with soil batch 3197382 was not spiked with the full list of analytes. The recoveries of all analytes spiked were in control.

The LCS associated with water batch 3196146 demonstrated a recovery below control limits for 3-nitroaniline. The LCSD was in control. The sample was not re-extracted due to expired holding times.

The MS/MSD performed on sample D3G1003640-008 demonstrated recoveries above control limits for acenaphthene. The MSD demonstrated an additional recovery above control limits for pyrene. Due to an oversight in the laboratory, the MS/MSD was not spiked with the full list of analytes.

A MS/MSD associated with water batch 3196146 was not requested.

GC Semivolatiles – Organochlorine Pesticides, SW846 8081A
Sample D3G100364-004 demonstrated a recovery of the surrogate decachlorobiphenyl above control limits. This may indicate a high bias in the sample results. Target compounds were not detected in the sample at concentrations above the reporting

limits; therefore no further corrective action was taken. The sample chromatogram indicates matrix interference.

In the analyses of samples D3G100364-001, 003, and 004 there were differences greater than 40% between the primary and confirmation column results for some analytes. The lower results are reported and the associated sample data are flagged "COL".

The method blank associated with water batch 3195253 demonstrated a recovery of the surrogate tetrachloro-m-xylene below control limits. The associated sample D3G100364-009 as well as the LCS and LCSD demonstrated recoveries of both surrogates within control limits. The sample was not re-extracted due to expired holding times.

The MS performed on sample D3G100364-002 was in control. Due to an accident in the laboratory, the MSD was lost.

A MS/MSD associated with water batch 3195253 was not requested.

Continuing Calibration Verification (CCV) standards associated with samples D3G100364-001 through 004 and the MS performed on sample 002 demonstrated percent differences greater than +15% for endosulfan II, methoxychlor, endosulfan sulfate, and endrin ketone and greater than –15% for 4,4,'-DDT and toxaphene. The average percent differences of all compounds in the CCV standards were less than ±15%, meeting the criteria for the method.

GC Semivolatiles – Organophosphorus Pesticides, SW846 8141A

The LCS/LCSD associated with water batch 3196150 demonstrated recoveries above control limits for simazine. This may indicate a high bias in the sample data, however the compound was not detected in the associated sample D3G100364-009.

Due to an oversight in the laboratory, the LCS/LCSD associated with soil batch 3197380 was not spiked with the full list of analytes. The recoveries of all analytes spiked were in control.

The MS/MSD performed on sample D3G100364-001 was not spiked with the full list of analytes due to an oversight in the laboratory. The recoveries of all analytes spiked were in control

A MS/MSD associated with water batch 3196150 was not requested.

A Continuing Calibration Verification (CCV) standard associated with samples D3G100364-001 through 004 and the MS/MSD performed on sample 001 demonstrated a percent difference greater than –15% for ronnel and a percent difference greater than +15% for fensulfothion. The average percent difference of all compounds in the CCV standard was less than ±15%, meeting all criteria for the method.

LC/MS – Herbicides, SW846 8321A

The MS/MSD performed on sample D3G100364-001 was in control.

A MS/MSD associated with water batch 3195283 was not requested.

A Continuing Calibration Verification (CCV) standard associated with samples D3G100364-001 through 004 and the MS/MSD performed on sample 001 demonstrated percent differences greater than +15% for MCPA, dichloroprop, MCPP, 2,4,5-T, 2,4-DB, 2,4,5-TP, and the surrogate DCAA. This may indicate a high bias in the samples data; however target compounds were not detected in the samples at concentrations above the reporting limits; therefore no further corrective action was taken.

The Second Source Verification of the Initial Calibration (ICV) associated with sample D3G100364-009 demonstrated a percent difference greater than ±25% for dalapon. Dalapon was not detected in the sample.

General Chemistry – Percent Moisture

The duplicate was performed on a sample from another client and/or lot and was in control.

EXECUTIVE SUMMARY - Detection Highlights

D3G100364

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SS03TK01 07/08/03 10:50 001				
alpha-Chlordane	1.1 J	1.9	ug/kg	SW846 8081A
4,4'-DDE	3.0 J,COL	30	ug/kg	SW846 8081A
4,4'-DDT	4.1 J	87	ug/kg	SW846 8081A
Dicamba	2.3 F	330	ug/kg	SW846 8321A
Benzo(a)anthracene	160 J	360	ug/kg	SW846 8270C
Benzo(b)fluoranthene	190 J	360	ug/kg	SW846 8270C
Benzo(k)fluoranthene	220 J	360	ug/kg	SW846 8270C
Benzo(ghi)perylene	160 J	360	ug/kg	SW846 8270C
Benzo(a)pyrene	210 J	360	ug/kg	SW846 8270C
Chrysene	240 J	360	ug/kg	SW846 8270C
Fluoranthene	450	360	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	140 J	360	ug/kg	SW846 8270C
Phenanthrene	220 J	360	ug/kg	SW846 8270C
Pyrene	400	360	ug/kg	SW846 8270C
Percent Moisture	8.5	0.10	%	MCAWW 160.3 MOD
SS03TK02 07/08/03 11:40 002				
4,4'-DDE	2.0 J	28	ug/kg	SW846 8081A
4,4'-DDT	8.4 J	84	ug/kg	SW846 8081A
Benzo(a)anthracene	46 J	350	ug/kg	SW846 8270C
Benzo(ghi)perylene	64 J	350	ug/kg	SW846 8270C
Benzo(a)pyrene	64 J	350	ug/kg	SW846 8270C
Chrysene	74 J	350	ug/kg	SW846 8270C
Fluoranthene	120 J	350	ug/kg	SW846 8270C
Phenanthrene	55 J	350	ug/kg	SW846 8270C
Pyrene	110 J	350	ug/kg	SW846 8270C
Percent Moisture	4.9	0.10	%	MCAWW 160.3 MOD
SS03TK03 07/08/03 12:40 003				
alpha-Chlordane	0.64	1.8	ug/kg	SW846 8081A
	Qualifiers: J,COL			
4,4'-DDT	0.94	83	ug/kg	SW846 8081A
	Qualifiers: J,COL			
Dieldrin	0.31	15	ug/kg	SW846 8081A
	Qualifiers: J,COL			
2,4-D	0.42 F	210	ug/kg	SW846 8321A
Dicamba	1.7 F	310	ug/kg	SW846 8321A
Benzo(ghi)perylene	47 J	340	ug/kg	SW846 8270C
Chrysene	42 J	340	ug/kg	SW846 8270C
Fluoranthene	64 J	340	ug/kg	SW846 8270C
Percent Moisture	4.0	0.10	%	MCAWW 160.3 MOD

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D3G100364

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SS03TK04 07/08/03 13:05 004				
alpha-Chlordane	0.34	1.8	ug/kg	SW846 8081A
	Qualifiers: J,COL			
4,4'-DDE	0.73	28	ug/kg	SW846 8081A
	Qualifiers: J,COL			
4,4'-DDT	2.9 J,COL	84	ug/kg	SW846 8081A
Dicamba	1.7 F	320	ug/kg	SW846 8321A
Benzo(a)anthracene	270 J	350	ug/kg	SW846 8270C
Benzo(b)fluoranthene	690	350	ug/kg	SW846 8270C
Benzo(k)fluoranthene	670	350	ug/kg	SW846 8270C
Benzo(ghi)perylene	370	350	ug/kg	SW846 8270C
Benzo(a)pyrene	460	350	ug/kg	SW846 8270C
Chrysene	560	350	ug/kg	SW846 8270C
Dibenz(a,h)anthracene	150 J	350	ug/kg	SW846 8270C
Fluoranthene	590	350	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	350	350	ug/kg	SW846 8270C
Phenanthrene	160 J	350	ug/kg	SW846 8270C
Pyrene	630	350	ug/kg	SW846 8270C
Carbazole	52 J	350	ug/kg	SW846 8270C
Percent Moisture	5.0	0.10	%	MCAWW 160.3 MOD
SS03LD03 07/08/03 13:35 005				
2,4-Dinitrotoluene	620	370	ug/kg	SW846 8270C
N-Nitrosodiphenylamine	77 J	370	ug/kg	SW846 8270C
Percent Moisture	11	0.10	%	MCAWW 160.3 MOD
SS03LD04 07/08/03 13:50 006				
bis(2-Ethylhexyl) phthalate	98 J	350	ug/kg	SW846 8270C
Chrysene	62 J	350	ug/kg	SW846 8270C
Fluoranthene	100 J	350	ug/kg	SW846 8270C
Phenanthrene	45 J	350	ug/kg	SW846 8270C
Pyrene	84 J	350	ug/kg	SW846 8270C
Percent Moisture	6.2	0.10	%	MCAWW 160.3 MOD
SS03LD01 07/08/03 14:20 007				
Benzo(a)anthracene	190 J	340	ug/kg	SW846 8270C
Benzo(b)fluoranthene	190 J	340	ug/kg	SW846 8270C
Benzo(k)fluoranthene	220 J	340	ug/kg	SW846 8270C
Benzo(ghi)perylene	140 J	340	ug/kg	SW846 8270C
Benzo(a)pyrene	220 J	340	ug/kg	SW846 8270C

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D3G100364

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SS03LD01 07/08/03 14:20 007				
Chrysene	230 J	340	ug/kg	SW846 8270C
Fluoranthene	490	340	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	130 J	340	ug/kg	SW846 8270C
Phenanthrene	240 J	340	ug/kg	SW846 8270C
Pyrene	440	340	ug/kg	SW846 8270C
Percent Moisture	4.3	0.10	%	MCAWW 160.3 MOD
SS03LD02 07/08/03 14:30 008				
Acenaphthene	11000 E	370	ug/kg	SW846 8270C
Acenaphthylene	270 J	370	ug/kg	SW846 8270C
Benzo(a)anthracene	33000 E	370	ug/kg	SW846 8270C
Benzo(b)fluoranthene	34000 E	370	ug/kg	SW846 8270C
Benzo(k)fluoranthene	31000 E	370	ug/kg	SW846 8270C
Benzoic acid	350 J	1800	ug/kg	SW846 8270C
Benzo(ghi)perylene	17000 E	370	ug/kg	SW846 8270C
Benzo(a)pyrene	24000 E	370	ug/kg	SW846 8270C
bis(2-Ethylhexyl) phthalate	1300	370	ug/kg	SW846 8270C
Chrysene	30000 E	370	ug/kg	SW846 8270C
Dibenz(a,h)anthracene	11000 E	370	ug/kg	SW846 8270C
Dibenzofuran	5500	370	ug/kg	SW846 8270C
2,4-Dimethylphenol	150 J	370	ug/kg	SW846 8270C
Fluoranthene	49000 E	370	ug/kg	SW846 8270C
Fluorene	9700 E	370	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	17000 E	370	ug/kg	SW846 8270C
2-Methylnaphthalene	2500	370	ug/kg	SW846 8270C
4-Methylphenol	240 J	370	ug/kg	SW846 8270C
Naphthalene	7000	370	ug/kg	SW846 8270C
Phenanthrene	40000 E	370	ug/kg	SW846 8270C
Phenol	140 J	370	ug/kg	SW846 8270C
Pyrene	38000 E	370	ug/kg	SW846 8270C
Carbazole	12000 E	370	ug/kg	SW846 8270C
Anthracene	14000 E	370	ug/kg	SW846 8270C
Dibenz(a,h)anthracene	10000	7300	ug/kg	SW846 8270C
Dibenzofuran	4900 J	7300	ug/kg	SW846 8270C
Acenaphthene	9700	7300	ug/kg	SW846 8270C
Benzo(a)anthracene	40000	7300	ug/kg	SW846 8270C
Benzo(b)fluoranthene	30000	7300	ug/kg	SW846 8270C
Benzo(k)fluoranthene	37000	7300	ug/kg	SW846 8270C
Benzo(ghi)perylene	25000	7300	ug/kg	SW846 8270C
Benzo(a)pyrene	39000	7300	ug/kg	SW846 8270C
Chrysene	45000	7300	ug/kg	SW846 8270C

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D3G100364

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SS03LD02 07/08/03 14:30 008				
Fluoranthene	100000	7300	ug/kg	SW846 8270C
Fluorene	8100	7300	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	22000	7300	ug/kg	SW846 8270C
2-Methylnaphthalene	2100 J	7300	ug/kg	SW846 8270C
Naphthalene	6200 J	7300	ug/kg	SW846 8270C
Phenanthrene	80000	7300	ug/kg	SW846 8270C
Pyrene	90000	7300	ug/kg	SW846 8270C
Carbazole	10000	7300	ug/kg	SW846 8270C
Anthracene	14000	7300	ug/kg	SW846 8270C
Percent Moisture	9.7	0.10	%	MCAWW 160.3 MOD
EQPT.BLK. 07/08/03 15:00 009				
4,4'-DDT	0.013 J	0.12	ug/L	SW846 8081A
bis(2-Ethylhexyl) phthalate	3.3 J	10	ug/L	SW846 8270C

METHODS SUMMARY

D3G100364

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
LCMS by 8321A	SW846 8321A	
LCMS by 8321A	SW846 8321A	SW846 8321A
Organochlorine Pesticides	SW846 8081A	SW846 3510C
Organochlorine Pesticides	SW846 8081A	SW846 3550
Organophosphorous Compounds by GC	SW846 8141A	
Organophosphorous Compounds by GC	SW846 8141A	SW846 3510
Percent Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3550B

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

METHOD / ANALYST SUMMARY

D3G100364

ANALYTICAL METHOD	ANALYST	ANALYST ID
MCAWW 160.3 MOD	Tammy DAvis	003508
SW846 8081A	Steve Szocik	002410
SW846 8141A	Steve Szocik	002410
SW846 8270C	Joann Peterson	011674
SW846 8321A	Steve Cowling	008738

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

D3G100364

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
FR3Q7	001	SS03TK01	07/08/03	10:50
FR3VC	002	SS03TK02	07/08/03	11:40
FR3VD	003	SS03TK03	07/08/03	12:40
FR3VE	004	SS03TK04	07/08/03	13:05
FR3VF	005	SS03LD03	07/08/03	13:35
FR3VG	006	SS03LD04	07/08/03	13:50
FR3VH	007	SS03LD01	07/08/03	14:20
FR3VJ	008	SS03LD02	07/08/03	14:30
FR3VL	009	EQPT.BLK.	07/08/03	15:00

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

EARTH TECH INC

Client Sample ID: SS03TK01

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-001 Work Order #...: FR3Q71AE Matrix.....: SO
Date Sampled...: 07/08/03 10:50 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/21/03
Prep Batch #...: 3197382 Analysis Time..: 21:50
Dilution Factor: 1
Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Hexachloroethane	ND	360	ug/kg	71
Acenaphthene	ND	360	ug/kg	49
Acenaphthylene	ND	360	ug/kg	47
Benzo(a)anthracene	**160 J**	**360**	**ug/kg**	**43**
Benzo(b)fluoranthene	**190 J**	**360**	**ug/kg**	**69**
Benzo(k)fluoranthene	**220 J**	**360**	**ug/kg**	**74**
Benzoic acid	ND	1700	ug/kg	310
Benzo(ghi)perylene	**160 J**	**360**	**ug/kg**	**45**
Benzo(a)pyrene	**210 J**	**360**	**ug/kg**	**56**
Benzyl alcohol	ND	360	ug/kg	90
bis(2-Chloroethoxy) methane	ND	360	ug/kg	60
bis(2-Chloroethyl)- ether	ND	360	ug/kg	69
bis(2-Chloroisopropyl) ether	ND	360	ug/kg	47
bis(2-Ethylhexyl) phthalate	ND	360	ug/kg	77
4-Bromophenyl phenyl ether	ND	360	ug/kg	60
Butyl benzyl phthalate	ND	360	ug/kg	70
4-Chloroaniline	ND	360	ug/kg	260
4-Chloro-3-methylphenol	ND	360	ug/kg	55
2-Chloronaphthalene	ND	360	ug/kg	45
2-Chlorophenol	ND	360	ug/kg	58
4-Chlorophenyl phenyl ether	ND	360	ug/kg	52
Chrysene	**240 J**	**360**	**ug/kg**	**37**
Dibenz(a,h)anthracene	ND	360	ug/kg	68
Dibenzofuran	ND	360	ug/kg	55
Di-n-butyl phthalate	ND	360	ug/kg	68
1,2-Dichlorobenzene	ND	360	ug/kg	50
1,3-Dichlorobenzene	ND	360	ug/kg	46
1,4-Dichlorobenzene	ND	360	ug/kg	56
3,3'-Dichlorobenzidine	ND	1700	ug/kg	300
2,4-Dichlorophenol	ND	360	ug/kg	61
Diethyl phthalate	ND	720	ug/kg	36
2,4-Dimethylphenol	ND	360	ug/kg	50

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03TK01

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-001 Work Order #...: FR3Q71AE Matrix.....: SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dimethyl phthalate	ND	360	ug/kg	47
Di-n-octyl phthalate	ND	360	ug/kg	57
4,6-Dinitro-2-methylphenol	ND	1700	ug/kg	130
2,4-Dinitrophenol	ND	1700	ug/kg	400
2,4-Dinitrotoluene	ND	360	ug/kg	49
2,6-Dinitrotoluene	ND	360	ug/kg	73
Fluoranthene	**450**	**360**	**ug/kg**	**43**
Fluorene	ND	360	ug/kg	59
Hexachlorobenzene	ND	360	ug/kg	67
Hexachlorobutadiene	ND	360	ug/kg	42
Hexachlorocyclopentadiene	ND	1700	ug/kg	47
Indeno(1,2,3-cd)pyrene	**140 J**	**360**	**ug/kg**	**48**
Isophorone	ND	360	ug/kg	50
2-Methylnaphthalene	ND	360	ug/kg	38
2-Methylphenol	ND	360	ug/kg	97
4-Methylphenol	ND	360	ug/kg	61
Naphthalene	ND	360	ug/kg	46
2-Nitroaniline	ND	1700	ug/kg	52
3-Nitroaniline	ND	1700	ug/kg	80
4-Nitroaniline	ND	1700	ug/kg	66
Nitrobenzene	ND	360	ug/kg	81
2-Nitrophenol	ND	360	ug/kg	48
4-Nitrophenol	ND	1700	ug/kg	430
N-Nitrosodi-n-propylamine	ND	360	ug/kg	79
N-Nitrosodiphenylamine	ND	360	ug/kg	43
Pentachlorophenol	ND	1700	ug/kg	70
Phenanthrene	**220 J**	**360**	**ug/kg**	**45**
Phenol	ND	360	ug/kg	59
Pyrene	**400**	**360**	**ug/kg**	**61**
1,2,4-Trichlorobenzene	ND	360	ug/kg	39
2,4,5-Trichlorophenol	ND	360	ug/kg	50
2,4,6-Trichlorophenol	ND	360	ug/kg	45
Carbazole	ND	360	ug/kg	37
Anthracene	ND	360	ug/kg	71

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03TK01

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-001 Work Order #...: FR3Q71AE Matrix.....: SO

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	73	(34 - 93)
Phenol-d5	73	(30 - 96)
Nitrobenzene-d5	69	(36 - 95)
2-Fluorobiphenyl	72	(35 - 91)
2,4,6-Tribromophenol	93	(21 - 98)
Terphenyl-d14	94	(34 - 98)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

EARTH TECH INC

Client Sample ID: SS03TK02

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-002 Work Order #...: FR3VC1AE Matrix.....: SO
Date Sampled...: 07/08/03 11:40 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/21/03
Prep Batch #...: 3197382 Analysis Time..: 22:14
Dilution Factor: 1
Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Hexachloroethane	ND	350	ug/kg	68
Acenaphthene	ND	350	ug/kg	47
Acenaphthylene	ND	350	ug/kg	45
Benzo(a)anthracene	**46 J**	**350**	**ug/kg**	**41**
Benzo(b)fluoranthene	ND	350	ug/kg	66
Benzo(k)fluoranthene	ND	350	ug/kg	72
Benzoic acid	ND	1700	ug/kg	290
Benzo(ghi)perylene	**64 J**	**350**	**ug/kg**	**43**
Benzo(a)pyrene	**64 J**	**350**	**ug/kg**	**54**
Benzyl alcohol	ND	350	ug/kg	86
bis(2-Chloroethoxy) methane	ND	350	ug/kg	58
bis(2-Chloroethyl)- ether	ND	350	ug/kg	66
bis(2-Chloroisopropyl) ether	ND	350	ug/kg	45
bis(2-Ethylhexyl) phthalate	ND	350	ug/kg	74
4-Bromophenyl phenyl ether	ND	350	ug/kg	58
Butyl benzyl phthalate	ND	350	ug/kg	67
4-Chloroaniline	ND	350	ug/kg	250
4-Chloro-3-methylphenol	ND	350	ug/kg	53
2-Chloronaphthalene	ND	350	ug/kg	43
2-Chlorophenol	ND	350	ug/kg	56
4-Chlorophenyl phenyl ether	ND	350	ug/kg	50
Chrysene	**74 J**	**350**	**ug/kg**	**36**
Dibenz(a,h)anthracene	ND	350	ug/kg	65
Dibenzofuran	ND	350	ug/kg	53
Di-n-butyl phthalate	ND	350	ug/kg	65
1,2-Dichlorobenzene	ND	350	ug/kg	48
1,3-Dichlorobenzene	ND	350	ug/kg	44
1,4-Dichlorobenzene	ND	350	ug/kg	54
3,3'-Dichlorobenzidine	ND	1700	ug/kg	280
2,4-Dichlorophenol	ND	350	ug/kg	59
Diethyl phthalate	ND	690	ug/kg	35
2,4-Dimethylphenol	ND	350	ug/kg	48

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03TK02

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-002 Work Order #...: FR3VC1AE Matrix.....: SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dimethyl phthalate	ND	350	ug/kg	45
Di-n-octyl phthalate	ND	350	ug/kg	55
4,6-Dinitro-2-methylphenol	ND	1700	ug/kg	130
2,4-Dinitrophenol	ND	1700	ug/kg	390
2,4-Dinitrotoluene	ND	350	ug/kg	47
2,6-Dinitrotoluene	ND	350	ug/kg	70
Fluoranthene	**120 J**	**350**	**ug/kg**	**41**
Fluorene	ND	350	ug/kg	57
Hexachlorobenzene	ND	350	ug/kg	64
Hexachlorobutadiene	ND	350	ug/kg	40
Hexachlorocyclopentadiene	ND	1700	ug/kg	45
Indeno(1,2,3-cd)pyrene	ND	350	ug/kg	46
Isophorone	ND	350	ug/kg	48
2-Methylnaphthalene	ND	350	ug/kg	37
2-Methylphenol	ND	350	ug/kg	94
4-Methylphenol	ND	350	ug/kg	59
Naphthalene	ND	350	ug/kg	44
2-Nitroaniline	ND	1700	ug/kg	50
3-Nitroaniline	ND	1700	ug/kg	77
4-Nitroaniline	ND	1700	ug/kg	63
Nitrobenzene	ND	350	ug/kg	78
2-Nitrophenol	ND	350	ug/kg	46
4-Nitrophenol	ND	1700	ug/kg	410
N-Nitrosodi-n-propylamine	ND	350	ug/kg	76
N-Nitrosodiphenylamine	ND	350	ug/kg	41
Pentachlorophenol	ND	1700	ug/kg	67
Phenanthrene	**55 J**	**350**	**ug/kg**	**43**
Phenol	ND	350	ug/kg	57
Pyrene	**110 J**	**350**	**ug/kg**	**59**
1,2,4-Trichlorobenzene	ND	350	ug/kg	38
2,4,5-Trichlorophenol	ND	350	ug/kg	48
2,4,6-Trichlorophenol	ND	350	ug/kg	43
Carbazole	ND	350	ug/kg	36
Anthracene	ND	350	ug/kg	68

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03TK02

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-002 Work Order #...: FR3VC1AE Matrix.....: SO

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	73	(34 - 93)
Phenol-d5	71	(30 - 96)
Nitrobenzene-d5	67	(36 - 95)
2-Fluorobiphenyl	69	(35 - 91)
2,4,6-Tribromophenol	80	(21 - 98)
Terphenyl-d14	87	(34 - 98)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

EARTH TECH INC

Client Sample ID: SS03TK03

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-003 Work Order #...: FR3VD1AE Matrix.....: SO
Date Sampled...: 07/08/03 12:40 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/21/03
Prep Batch #...: 3197382 Analysis Time..: 22:37
Dilution Factor: 1
Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Hexachloroethane	ND	340	ug/kg	68
Acenaphthene	ND	340	ug/kg	47
Acenaphthylene	ND	340	ug/kg	45
Benzo(a)anthracene	ND	340	ug/kg	41
Benzo(b)fluoranthene	ND	340	ug/kg	66
Benzo(k)fluoranthene	ND	340	ug/kg	71
Benzoic acid	ND	1700	ug/kg	290
Benzo(ghi)perylene	**47 J**	**340**	**ug/kg**	**43**
Benzo(a)pyrene	ND	340	ug/kg	53
Benzyl alcohol	ND	340	ug/kg	85
bis(2-Chloroethoxy) methane	ND	340	ug/kg	57
bis(2-Chloroethyl)-ether	ND	340	ug/kg	66
bis(2-Chloroisopropyl) ether	ND	340	ug/kg	45
bis(2-Ethylhexyl) phthalate	ND	340	ug/kg	73
4-Bromophenyl phenyl ether	ND	340	ug/kg	57
Butyl benzyl phthalate	ND	340	ug/kg	67
4-Chloroaniline	ND	340	ug/kg	250
4-Chloro-3-methylphenol	ND	340	ug/kg	52
2-Chloronaphthalene	ND	340	ug/kg	43
2-Chlorophenol	ND	340	ug/kg	55
4-Chlorophenyl phenyl ether	ND	340	ug/kg	50
Chrysene	**42 J**	**340**	**ug/kg**	**35**
Dibenz(a,h)anthracene	ND	340	ug/kg	65
Dibenzofuran	ND	340	ug/kg	52
Di-n-butyl phthalate	ND	340	ug/kg	65
1,2-Dichlorobenzene	ND	340	ug/kg	48
1,3-Dichlorobenzene	ND	340	ug/kg	44
1,4-Dichlorobenzene	ND	340	ug/kg	53
3,3'-Dichlorobenzidine	ND	1700	ug/kg	280
2,4-Dichlorophenol	ND	340	ug/kg	58
Diethyl phthalate	ND	690	ug/kg	34
2,4-Dimethylphenol	ND	340	ug/kg	48

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03TK03

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-003 Work Order #...: FR3VD1AE Matrix.....: SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dimethyl phthalate	ND	340	ug/kg	45
Di-n-octyl phthalate	ND	340	ug/kg	54
4,6-Dinitro-2-methylphenol	ND	1700	ug/kg	120
2,4-Dinitrophenol	ND	1700	ug/kg	390
2,4-Dinitrotoluene	ND	340	ug/kg	47
2,6-Dinitrotoluene	ND	340	ug/kg	70
Fluoranthene	**64 J**	**340**	**ug/kg**	**41**
Fluorene	ND	340	ug/kg	56
Hexachlorobenzene	ND	340	ug/kg	64
Hexachlorobutadiene	ND	340	ug/kg	40
Hexachlorocyclopentadiene	ND	1700	ug/kg	45
Indeno(1,2,3-cd)pyrene	ND	340	ug/kg	46
Isophorone	ND	340	ug/kg	48
2-Methylnaphthalene	ND	340	ug/kg	36
2-Methylphenol	ND	340	ug/kg	93
4-Methylphenol	ND	340	ug/kg	58
Naphthalene	ND	340	ug/kg	44
2-Nitroaniline	ND	1700	ug/kg	50
3-Nitroaniline	ND	1700	ug/kg	76
4-Nitroaniline	ND	1700	ug/kg	62
Nitrobenzene	ND	340	ug/kg	77
2-Nitrophenol	ND	340	ug/kg	46
4-Nitrophenol	ND	1700	ug/kg	410
N-Nitrosodi-n-propylamine	ND	340	ug/kg	75
N-Nitrosodiphenylamine	ND	340	ug/kg	41
Pentachlorophenol	ND	1700	ug/kg	67
Phenanthrene	ND	340	ug/kg	43
Phenol	ND	340	ug/kg	56
Pyrene	ND	340	ug/kg	58
1,2,4-Trichlorobenzene	ND	340	ug/kg	37
2,4,5-Trichlorophenol	ND	340	ug/kg	48
2,4,6-Trichlorophenol	ND	340	ug/kg	43
Carbazole	ND	340	ug/kg	35
Anthracene	ND	340	ug/kg	68

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03TK03

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-003 Work Order #...: FR3VD1AE Matrix.....: SO

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	62	(34 - 93)
Phenol-d5	66	(30 - 96)
Nitrobenzene-d5	55	(36 - 95)
2-Fluorobiphenyl	71	(35 - 91)
2,4,6-Tribromophenol	88	(21 - 98)
Terphenyl-d14	83	(34 - 98)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

EARTH TECH INC

Client Sample ID: SS03TK04

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-004 Work Order #...: FR3VE1AE Matrix.....: SO
Date Sampled...: 07/08/03 13:05 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/21/03
Prep Batch #...: 3197382 Analysis Time..: 23:00
Dilution Factor: 1
Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Hexachloroethane	ND	350	ug/kg	68
Acenaphthene	ND	350	ug/kg	47
Acenaphthylene	ND	350	ug/kg	45
Benzo(a)anthracene	**270 J**	**350**	**ug/kg**	**41**
Benzo(b)fluoranthene	**690**	**350**	**ug/kg**	**66**
Benzo(k)fluoranthene	**670**	**350**	**ug/kg**	**72**
Benzoic acid	ND	1700	ug/kg	290
Benzo(ghi)perylene	**370**	**350**	**ug/kg**	**43**
Benzo(a)pyrene	**460**	**350**	**ug/kg**	**54**
Benzyl alcohol	ND	350	ug/kg	86
bis(2-Chloroethoxy) methane	ND	350	ug/kg	58
bis(2-Chloroethyl)- ether	ND	350	ug/kg	66
bis(2-Chloroisopropyl) ether	ND	350	ug/kg	45
bis(2-Ethylhexyl) phthalate	ND	350	ug/kg	74
4-Bromophenyl phenyl ether	ND	350	ug/kg	58
Butyl benzyl phthalate	ND	350	ug/kg	67
4-Chloroaniline	ND	350	ug/kg	250
4-Chloro-3-methylphenol	ND	350	ug/kg	53
2-Chloronaphthalene	ND	350	ug/kg	43
2-Chlorophenol	ND	350	ug/kg	56
4-Chlorophenyl phenyl ether	ND	350	ug/kg	51
Chrysene	**560**	**350**	**ug/kg**	**36**
Dibenz(a,h)anthracene	**150 J**	**350**	**ug/kg**	**65**
Dibenzofuran	ND	350	ug/kg	53
Di-n-butyl phthalate	ND	350	ug/kg	65
1,2-Dichlorobenzene	ND	350	ug/kg	48
1,3-Dichlorobenzene	ND	350	ug/kg	44
1,4-Dichlorobenzene	ND	350	ug/kg	54
3,3'-Dichlorobenzidine	ND	1700	ug/kg	280
2,4-Dichlorophenol	ND	350	ug/kg	59
Diethyl phthalate	ND	690	ug/kg	35
2,4-Dimethylphenol	ND	350	ug/kg	48

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03TK04

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-004 Work Order #...: FR3VE1AE Matrix.....: SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dimethyl phthalate	ND	350	ug/kg	45
Di-n-octyl phthalate	ND	350	ug/kg	55
4,6-Dinitro-2-methylphenol	ND	1700	ug/kg	130
2,4-Dinitrophenol	ND	1700	ug/kg	390
2,4-Dinitrotoluene	ND	350	ug/kg	47
2,6-Dinitrotoluene	ND	350	ug/kg	70
Fluoranthene	**590**	**350**	**ug/kg**	**41**
Fluorene	ND	350	ug/kg	57
Hexachlorobenzene	ND	350	ug/kg	64
Hexachlorobutadiene	ND	350	ug/kg	40
Hexachlorocyclopentadiene	ND	1700	ug/kg	45
Indeno(1,2,3-cd)pyrene	**350**	**350**	**ug/kg**	**46**
Isophorone	ND	350	ug/kg	48
2-Methylnaphthalene	ND	350	ug/kg	37
2-Methylphenol	ND	350	ug/kg	94
4-Methylphenol	ND	350	ug/kg	59
Naphthalene	ND	350	ug/kg	44
2-Nitroaniline	ND	1700	ug/kg	51
3-Nitroaniline	ND	1700	ug/kg	77
4-Nitroaniline	ND	1700	ug/kg	63
Nitrobenzene	ND	350	ug/kg	78
2-Nitrophenol	ND	350	ug/kg	46
4-Nitrophenol	ND	1700	ug/kg	410
N-Nitrosodi-n-propylamine	ND	350	ug/kg	76
N-Nitrosodiphenylamine	ND	350	ug/kg	41
Pentachlorophenol	ND	1700	ug/kg	67
Phenanthrene	**160 J**	**350**	**ug/kg**	**43**
Phenol	ND	350	ug/kg	57
Pyrene	**630**	**350**	**ug/kg**	**59**
1,2,4-Trichlorobenzene	ND	350	ug/kg	38
2,4,5-Trichlorophenol	ND	350	ug/kg	48
2,4,6-Trichlorophenol	ND	350	ug/kg	43
Carbazole	**52 J**	**350**	**ug/kg**	**36**
Anthracene	ND	350	ug/kg	68

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03TK04

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-004 Work Order #...: FR3VE1AE Matrix.....: SO

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	72	(34 - 93)
Phenol-d5	71	(30 - 96)
Nitrobenzene-d5	67	(36 - 95)
2-Fluorobiphenyl	68	(35 - 91)
2,4,6-Tribromophenol	79	(21 - 98)
Terphenyl-d14	86	(34 - 98)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

EARTH TECH INC

Client Sample ID: SS03LD03

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-005 Work Order #...: FR3VF1AA Matrix.....: SO
Date Sampled...: 07/08/03 13:35 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/21/03
Prep Batch #...: 3197382 Analysis Time..: 23:24
Dilution Factor: 1
Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Hexachloroethane	ND	370	ug/kg	73
Acenaphthene	ND	370	ug/kg	50
Acenaphthylene	ND	370	ug/kg	48
Benzo(a)anthracene	ND	370	ug/kg	44
Benzo(b)fluoranthene	ND	370	ug/kg	70
Benzo(k)fluoranthene	ND	370	ug/kg	76
Benzoic acid	ND	1800	ug/kg	310
Benzo(ghi)perylene	ND	370	ug/kg	46
Benzo(a)pyrene	ND	370	ug/kg	57
Benzyl alcohol	ND	370	ug/kg	92
bis(2-Chloroethoxy) methane	ND	370	ug/kg	62
bis(2-Chloroethyl)-ether	ND	370	ug/kg	70
bis(2-Chloroisopropyl) ether	ND	370	ug/kg	48
bis(2-Ethylhexyl) phthalate	ND	370	ug/kg	78
4-Bromophenyl phenyl ether	ND	370	ug/kg	62
Butyl benzyl phthalate	ND	370	ug/kg	72
4-Chloroaniline	ND	370	ug/kg	270
4-Chloro-3-methylphenol	ND	370	ug/kg	56
2-Chloronaphthalene	ND	370	ug/kg	46
2-Chlorophenol	ND	370	ug/kg	59
4-Chlorophenyl phenyl ether	ND	370	ug/kg	54
Chrysene	ND	370	ug/kg	38
Dibenz(a,h)anthracene	ND	370	ug/kg	69
Dibenzofuran	ND	370	ug/kg	56
Di-n-butyl phthalate	ND	370	ug/kg	69
1,2-Dichlorobenzene	ND	370	ug/kg	51
1,3-Dichlorobenzene	ND	370	ug/kg	47
1,4-Dichlorobenzene	ND	370	ug/kg	57
3,3'-Dichlorobenzidine	ND	1800	ug/kg	300
2,4-Dichlorophenol	ND	370	ug/kg	63
Diethyl phthalate	ND	740	ug/kg	37
2,4-Dimethylphenol	ND	370	ug/kg	51

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03LD03

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-005 Work Order #...: FR3VF1AA Matrix.....: SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dimethyl phthalate	ND	370	ug/kg	48
Di-n-octyl phthalate	ND	370	ug/kg	58
4,6-Dinitro-2-methylphenol	ND	1800	ug/kg	130
2,4-Dinitrophenol	ND	1800	ug/kg	410
2,4-Dinitrotoluene	**620**	**370**	**ug/kg**	**50**
2,6-Dinitrotoluene	ND	370	ug/kg	75
Fluoranthene	ND	370	ug/kg	44
Fluorene	ND	370	ug/kg	60
Hexachlorobenzene	ND	370	ug/kg	68
Hexachlorobutadiene	ND	370	ug/kg	43
Hexachlorocyclopentadiene	ND	1800	ug/kg	48
Indeno(1,2,3-cd)pyrene	ND	370	ug/kg	49
Isophorone	ND	370	ug/kg	51
2-Methylnaphthalene	ND	370	ug/kg	39
2-Methylphenol	ND	370	ug/kg	100
4-Methylphenol	ND	370	ug/kg	63
Naphthalene	ND	370	ug/kg	47
2-Nitroaniline	ND	1800	ug/kg	54
3-Nitroaniline	ND	1800	ug/kg	82
4-Nitroaniline	ND	1800	ug/kg	67
Nitrobenzene	ND	370	ug/kg	83
2-Nitrophenol	ND	370	ug/kg	49
4-Nitrophenol	ND	1800	ug/kg	440
N-Nitrosodi-n-propylamine	ND	370	ug/kg	81
N-Nitrosodiphenylamine	**77 J**	**370**	**ug/kg**	**44**
Pentachlorophenol	ND	1800	ug/kg	72
Phenanthrene	ND	370	ug/kg	46
Phenol	ND	370	ug/kg	60
Pyrene	ND	370	ug/kg	63
1,2,4-Trichlorobenzene	ND	370	ug/kg	40
2,4,5-Trichlorophenol	ND	370	ug/kg	51
2,4,6-Trichlorophenol	ND	370	ug/kg	46
Carbazole	ND	370	ug/kg	38
Anthracene	ND	370	ug/kg	73

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03LD03

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-005 Work Order #...: FR3VF1AA Matrix.....: SO

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	73	(34 - 93)
Phenol-d5	72	(30 - 96)
Nitrobenzene-d5	69	(36 - 95)
2-Fluorobiphenyl	68	(35 - 91)
2,4,6-Tribromophenol	80	(21 - 98)
Terphenyl-d14	86	(34 - 98)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

EARTH TECH INC

Client Sample ID: SS03LD04

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-006 Work Order #...: FR3VG1AA Matrix.....: SO
Date Sampled...: 07/08/03 13:50 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/21/03
Prep Batch #...: 3197382 Analysis Time..: 23:47
Dilution Factor: 1
Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Hexachloroethane	ND	350	ug/kg	69
Acenaphthene	ND	350	ug/kg	48
Acenaphthylene	ND	350	ug/kg	46
Benzo(a)anthracene	ND	350	ug/kg	42
Benzo(b)fluoranthene	ND	350	ug/kg	67
Benzo(k)fluoranthene	ND	350	ug/kg	73
Benzoic acid	ND	1700	ug/kg	300
Benzo(ghi)perylene	ND	350	ug/kg	44
Benzo(a)pyrene	ND	350	ug/kg	54
Benzyl alcohol	ND	350	ug/kg	87
bis(2-Chloroethoxy) methane	ND	350	ug/kg	59
bis(2-Chloroethyl)-ether	ND	350	ug/kg	67
bis(2-Chloroisopropyl) ether	ND	350	ug/kg	46
bis(2-Ethylhexyl) phthalate	**98 J**	**350**	**ug/kg**	**75**
4-Bromophenyl phenyl ether	ND	350	ug/kg	59
Butyl benzyl phthalate	ND	350	ug/kg	68
4-Chloroaniline	ND	350	ug/kg	260
4-Chloro-3-methylphenol	ND	350	ug/kg	53
2-Chloronaphthalene	ND	350	ug/kg	44
2-Chlorophenol	ND	350	ug/kg	57
4-Chlorophenyl phenyl ether	ND	350	ug/kg	51
Chrysene	**62 J**	**350**	**ug/kg**	**36**
Dibenz(a,h)anthracene	ND	350	ug/kg	66
Dibenzofuran	ND	350	ug/kg	53
Di-n-butyl phthalate	ND	350	ug/kg	66
1,2-Dichlorobenzene	ND	350	ug/kg	49
1,3-Dichlorobenzene	ND	350	ug/kg	45
1,4-Dichlorobenzene	ND	350	ug/kg	54
3,3'-Dichlorobenzidine	ND	1700	ug/kg	290
2,4-Dichlorophenol	ND	350	ug/kg	60
Diethyl phthalate	ND	700	ug/kg	35
2,4-Dimethylphenol	ND	350	ug/kg	49

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03LD04

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-006 Work Order #...: FR3VG1AA Matrix.....: SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dimethyl phthalate	ND	350	ug/kg	46
Di-n-octyl phthalate	ND	350	ug/kg	55
4,6-Dinitro-2-methylphenol	ND	1700	ug/kg	130
2,4-Dinitrophenol	ND	1700	ug/kg	390
2,4-Dinitrotoluene	ND	350	ug/kg	48
2,6-Dinitrotoluene	ND	350	ug/kg	71
Fluoranthene	**100 J**	**350**	**ug/kg**	**42**
Fluorene	ND	350	ug/kg	58
Hexachlorobenzene	ND	350	ug/kg	65
Hexachlorobutadiene	ND	350	ug/kg	41
Hexachlorocyclopentadiene	ND	1700	ug/kg	46
Indeno(1,2,3-cd)pyrene	ND	350	ug/kg	47
Isophorone	ND	350	ug/kg	49
2-Methylnaphthalene	ND	350	ug/kg	37
2-Methylphenol	ND	350	ug/kg	95
4-Methylphenol	ND	350	ug/kg	60
Naphthalene	ND	350	ug/kg	45
2-Nitroaniline	ND	1700	ug/kg	51
3-Nitroaniline	ND	1700	ug/kg	78
4-Nitroaniline	ND	1700	ug/kg	64
Nitrobenzene	ND	350	ug/kg	79
2-Nitrophenol	ND	350	ug/kg	47
4-Nitrophenol	ND	1700	ug/kg	420
N-Nitrosodi-n-propylamine	ND	350	ug/kg	77
N-Nitrosodiphenylamine	ND	350	ug/kg	42
Pentachlorophenol	ND	1700	ug/kg	68
Phenanthrene	**45 J**	**350**	**ug/kg**	**44**
Phenol	ND	350	ug/kg	58
Pyrene	**84 J**	**350**	**ug/kg**	**60**
1,2,4-Trichlorobenzene	ND	350	ug/kg	38
2,4,5-Trichlorophenol	ND	350	ug/kg	49
2,4,6-Trichlorophenol	ND	350	ug/kg	44
Carbazole	ND	350	ug/kg	36
Anthracene	ND	350	ug/kg	69

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03LD04

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-006 Work Order #...: FR3VG1AA Matrix.....: SO

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	69	(34 - 93)
Phenol-d5	67	(30 - 96)
Nitrobenzene-d5	63	(36 - 95)
2-Fluorobiphenyl	63	(35 - 91)
2,4,6-Tribromophenol	71	(21 - 98)
Terphenyl-d14	68	(34 - 98)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

EARTH TECH INC

Client Sample ID: SS03LD01

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-007 Work Order #...: FR3VH1AA Matrix.....: SO
Date Sampled...: 07/08/03 14:20 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/22/03
Prep Batch #...: 3197382 Analysis Time..: 00:10
Dilution Factor: 1
Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Hexachloroethane	ND	340	ug/kg	68
Acenaphthene	ND	340	ug/kg	47
Acenaphthylene	ND	340	ug/kg	45
Benzo(a)anthracene	**190 J**	**340**	**ug/kg**	**41**
Benzo(b)fluoranthene	**190 J**	**340**	**ug/kg**	**66**
Benzo(k)fluoranthene	**220 J**	**340**	**ug/kg**	**71**
Benzoic acid	ND	1700	ug/kg	290
Benzo(ghi)perylene	**140 J**	**340**	**ug/kg**	**43**
Benzo(a)pyrene	**220 J**	**340**	**ug/kg**	**53**
Benzyl alcohol	ND	340	ug/kg	86
bis(2-Chloroethoxy) methane	ND	340	ug/kg	57
bis(2-Chloroethyl)-ether	ND	340	ug/kg	66
bis(2-Chloroisopropyl) ether	ND	340	ug/kg	45
bis(2-Ethylhexyl) phthalate	ND	340	ug/kg	73
4-Bromophenyl phenyl ether	ND	340	ug/kg	57
Butyl benzyl phthalate	ND	340	ug/kg	67
4-Chloroaniline	ND	340	ug/kg	250
4-Chloro-3-methylphenol	ND	340	ug/kg	52
2-Chloronaphthalene	ND	340	ug/kg	43
2-Chlorophenol	ND	340	ug/kg	55
4-Chlorophenyl phenyl ether	ND	340	ug/kg	50
Chrysene	**230 J**	**340**	**ug/kg**	**36**
Dibenz(a,h)anthracene	ND	340	ug/kg	65
Dibenzofuran	ND	340	ug/kg	52
Di-n-butyl phthalate	ND	340	ug/kg	65
1,2-Dichlorobenzene	ND	340	ug/kg	48
1,3-Dichlorobenzene	ND	340	ug/kg	44
1,4-Dichlorobenzene	ND	340	ug/kg	53
3,3'-Dichlorobenzidine	ND	1700	ug/kg	280
2,4-Dichlorophenol	ND	340	ug/kg	59
Diethyl phthalate	ND	690	ug/kg	34
2,4-Dimethylphenol	ND	340	ug/kg	48

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03LD01

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-007 Work Order #...: FR3VH1AA Matrix.....: SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dimethyl phthalate	ND	340	ug/kg	45
Di-n-octyl phthalate	ND	340	ug/kg	54
4,6-Dinitro-2-methylphenol	ND	1700	ug/kg	130
2,4-Dinitrophenol	ND	1700	ug/kg	390
2,4-Dinitrotoluene	ND	340	ug/kg	47
2,6-Dinitrotoluene	ND	340	ug/kg	70
Fluoranthene	**490**	**340**	**ug/kg**	**41**
Fluorene	ND	340	ug/kg	56
Hexachlorobenzene	ND	340	ug/kg	64
Hexachlorobutadiene	ND	340	ug/kg	40
Hexachlorocyclopentadiene	ND	1700	ug/kg	45
Indeno(1,2,3-cd)pyrene	**130 J**	**340**	**ug/kg**	**46**
Isophorone	ND	340	ug/kg	48
2-Methylnaphthalene	ND	340	ug/kg	37
2-Methylphenol	ND	340	ug/kg	93
4-Methylphenol	ND	340	ug/kg	59
Naphthalene	ND	340	ug/kg	44
2-Nitroaniline	ND	1700	ug/kg	50
3-Nitroaniline	ND	1700	ug/kg	76
4-Nitroaniline	ND	1700	ug/kg	63
Nitrobenzene	ND	340	ug/kg	77
2-Nitrophenol	ND	340	ug/kg	46
4-Nitrophenol	ND	1700	ug/kg	410
N-Nitrosodi-n-propylamine	ND	340	ug/kg	75
N-Nitrosodiphenylamine	ND	340	ug/kg	41
Pentachlorophenol	ND	1700	ug/kg	67
Phenanthrene	**240 J**	**340**	**ug/kg**	**43**
Phenol	ND	340	ug/kg	56
Pyrene	**440**	**340**	**ug/kg**	**59**
1,2,4-Trichlorobenzene	ND	340	ug/kg	38
2,4,5-Trichlorophenol	ND	340	ug/kg	48
2,4,6-Trichlorophenol	ND	340	ug/kg	43
Carbazole	ND	340	ug/kg	36
Anthracene	ND	340	ug/kg	68

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03LD01

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-007 Work Order #...: FR3VH1AA Matrix.....: SO

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	67	(34 - 93)
Phenol-d5	66	(30 - 96)
Nitrobenzene-d5	63	(36 - 95)
2-Fluorobiphenyl	64	(35 - 91)
2,4,6-Tribromophenol	71	(21 - 98)
Terphenyl-d14	80	(34 - 98)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

EARTH TECH INC

Client Sample ID: SS03LD02

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-008 Work Order #...: FR3VJ1AA Matrix.....: SO
Date Sampled...: 07/08/03 14:30 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/22/03
Prep Batch #...: 3197382 Analysis Time..: 00:33
Dilution Factor: 1
Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Hexachloroethane	ND	370	ug/kg	72
Acenaphthene	**11000 E**	**370**	**ug/kg**	**50**
Acenaphthylene	**270 J**	**370**	**ug/kg**	**48**
Benzo(a)anthracene	**33000 E**	**370**	**ug/kg**	**43**
Benzo(b)fluoranthene	**34000 E**	**370**	**ug/kg**	**70**
Benzo(k)fluoranthene	**31000 E**	**370**	**ug/kg**	**75**
Benzoic acid	**350 J**	**1800**	**ug/kg**	**310**
Benzo(ghi)perylene	**17000 E**	**370**	**ug/kg**	**45**
Benzo(a)pyrene	**24000 E**	**370**	**ug/kg**	**56**
Benzyl alcohol	ND	370	ug/kg	91
bis(2-Chloroethoxy) methane	ND	370	ug/kg	61
bis(2-Chloroethyl)- ether	ND	370	ug/kg	70
bis(2-Chloroisopropyl) ether	ND	370	ug/kg	48
bis(2-Ethylhexyl) phthalate	**1300**	**370**	**ug/kg**	**78**
4-Bromophenyl phenyl ether	ND	370	ug/kg	61
Butyl benzyl phthalate	ND	370	ug/kg	71
4-Chloroaniline	ND	370	ug/kg	270
4-Chloro-3-methylphenol	ND	370	ug/kg	55
2-Chloronaphthalene	ND	370	ug/kg	45
2-Chlorophenol	ND	370	ug/kg	59
4-Chlorophenyl phenyl ether	ND	370	ug/kg	53
Chrysene	**30000 E**	**370**	**ug/kg**	**38**
Dibenz(a,h)anthracene	**11000 E**	**370**	**ug/kg**	**69**
Dibenzofuran	**5500**	**370**	**ug/kg**	**55**
Di-n-butyl phthalate	ND	370	ug/kg	69
1,2-Dichlorobenzene	ND	370	ug/kg	51
1,3-Dichlorobenzene	ND	370	ug/kg	47
1,4-Dichlorobenzene	ND	370	ug/kg	56
3,3'-Dichlorobenzidine	ND	1800	ug/kg	300
2,4-Dichlorophenol	ND	370	ug/kg	62
Diethyl phthalate	ND	730	ug/kg	37
2,4-Dimethylphenol	**150 J**	**370**	**ug/kg**	**51**

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03LD02

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-008 Work Order #...: FR3VJ1AA Matrix.....: SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dimethyl phthalate	ND	370	ug/kg	48
Di-n-octyl phthalate	ND	370	ug/kg	58
4,6-Dinitro-2-methylphenol	ND	1800	ug/kg	130
2,4-Dinitrophenol	ND	1800	ug/kg	410
2,4-Dinitrotoluene	ND	370	ug/kg	50
2,6-Dinitrotoluene	ND	370	ug/kg	74
Fluoranthene	**49000 E**	**370**	**ug/kg**	**43**
Fluorene	**9700 E**	**370**	**ug/kg**	**60**
Hexachlorobenzene	ND	370	ug/kg	68
Hexachlorobutadiene	ND	370	ug/kg	42
Hexachlorocyclopentadiene	ND	1800	ug/kg	48
Indeno(1,2,3-cd)pyrene	**17000 E**	**370**	**ug/kg**	**49**
Isophorone	ND	370	ug/kg	51
2-Methylnaphthalene	**2500**	**370**	**ug/kg**	**39**
2-Methylphenol	ND	370	ug/kg	99
4-Methylphenol	**240 J**	**370**	**ug/kg**	**62**
Naphthalene	**7000**	**370**	**ug/kg**	**47**
2-Nitroaniline	ND	1800	ug/kg	53
3-Nitroaniline	ND	1800	ug/kg	81
4-Nitroaniline	ND	1800	ug/kg	66
Nitrobenzene	ND	370	ug/kg	82
2-Nitrophenol	ND	370	ug/kg	49
4-Nitrophenol	ND	1800	ug/kg	430
N-Nitrosodi-n-propylamine	ND	370	ug/kg	80
N-Nitrosodiphenylamine	ND	370	ug/kg	43
Pentachlorophenol	ND	1800	ug/kg	71
Phenanthrene	**40000 E**	**370**	**ug/kg**	**45**
Phenol	**140 J**	**370**	**ug/kg**	**60**
Pyrene	**38000 E**	**370**	**ug/kg**	**62**
1,2,4-Trichlorobenzene	ND	370	ug/kg	40
2,4,5-Trichlorophenol	ND	370	ug/kg	51
2,4,6-Trichlorophenol	ND	370	ug/kg	45
Carbazole	**12000 E**	**370**	**ug/kg**	**38**
Anthracene	**14000 E**	**370**	**ug/kg**	**72**

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03LD02

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-008 Work Order #...: FR3VJ1AA Matrix.....: SO

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	71	(34 - 93)
Phenol-d5	70	(30 - 96)
Nitrobenzene-d5	64	(36 - 95)
2-Fluorobiphenyl	68	(35 - 91)
2,4,6-Tribromophenol	71	(21 - 98)
Terphenyl-d14	71	(34 - 98)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

E Estimated result. Result concentration exceeds the calibration range.

J Estimated result. Result is less than RL

EARTH TECH INC

Client Sample ID: SS03LD02

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-008 Work Order #...: FR3VJ2AA Matrix.....: SO
Date Sampled...: 07/08/03 14:30 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/22/03
Prep Batch #...: 3197382 Analysis Time..: 14:19
Dilution Factor: 20
Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dibenz(a,h)anthracene	**10000**	**7300**	**ug/kg**	**1400**
Dibenzofuran	**4900 J**	**7300**	**ug/kg**	**1100**
Di-n-butyl phthalate	ND	7300	ug/kg	1400
1,2-Dichlorobenzene	ND	7300	ug/kg	1000
1,3-Dichlorobenzene	ND	7300	ug/kg	930
1,4-Dichlorobenzene	ND	7300	ug/kg	1100
3,3'-Dichlorobenzidine	ND	35000	ug/kg	6000
2,4-Dichlorophenol	ND	7300	ug/kg	1200
Diethyl phthalate	ND	15000	ug/kg	730
2,4-Dimethylphenol	ND	7300	ug/kg	1000
Dimethyl phthalate	ND	7300	ug/kg	950
Di-n-octyl phthalate	ND	7300	ug/kg	1200
4,6-Dinitro-2-methylphenol	ND	35000	ug/kg	2700
2,4-Dinitrophenol	ND	35000	ug/kg	8200
2,4-Dinitrotoluene	ND	7300	ug/kg	1000
Hexachloroethane	ND	7300	ug/kg	1400
Acenaphthene	**9700**	**7300**	**ug/kg**	**1000**
Acenaphthylene	ND	7300	ug/kg	950
Benzo(a)anthracene	**40000**	**7300**	**ug/kg**	**860**
Benzo(b)fluoranthene	**30000**	**7300**	**ug/kg**	**1400**
Benzo(k)fluoranthene	**37000**	**7300**	**ug/kg**	**1500**
Benzoic acid	ND	35000	ug/kg	6200
Benzo(ghi)perylene	**25000**	**7300**	**ug/kg**	**910**
Benzo(a)pyrene	**39000**	**7300**	**ug/kg**	**1100**
Benzyl alcohol	ND	7300	ug/kg	1800
bis(2-Chloroethoxy) methane	ND	7300	ug/kg	1200
bis(2-Chloroethyl)-ether	ND	7300	ug/kg	1400
bis(2-Chloroisopropyl) ether	ND	7300	ug/kg	950
bis(2-Ethylhexyl) phthalate	ND	7300	ug/kg	1600
4-Bromophenyl phenyl ether	ND	7300	ug/kg	1200
Butyl benzyl phthalate	ND	7300	ug/kg	1400
4-Chloroaniline	ND	7300	ug/kg	5300

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03LD02

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-008 Work Order #...: FR3VJ2AA Matrix.....: SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
4-Chloro-3-methylphenol	ND	7300	ug/kg	1100
2-Chloronaphthalene	ND	7300	ug/kg	910
2-Chlorophenol	ND	7300	ug/kg	1200
4-Chlorophenyl phenyl ether	ND	7300	ug/kg	1100
Chrysene	**45000**	**7300**	**ug/kg**	**750**
2,6-Dinitrotoluene	ND	7300	ug/kg	1500
Fluoranthene	**100000**	**7300**	**ug/kg**	**860**
Fluorene	**8100**	**7300**	**ug/kg**	**1200**
Hexachlorobenzene	ND	7300	ug/kg	1400
Hexachlorobutadiene	ND	7300	ug/kg	840
Hexachlorocyclopenta-diene	ND	35000	ug/kg	950
Indeno(1,2,3-cd)pyrene	**22000**	**7300**	**ug/kg**	**970**
Isophorone	ND	7300	ug/kg	1000
2-Methylnaphthalene	**2100 J**	**7300**	**ug/kg**	**780**
2-Methylphenol	ND	7300	ug/kg	2000
4-Methylphenol	ND	7300	ug/kg	1200
Naphthalene	**6200 J**	**7300**	**ug/kg**	**930**
2-Nitroaniline	ND	35000	ug/kg	1100
3-Nitroaniline	ND	35000	ug/kg	1600
4-Nitroaniline	ND	35000	ug/kg	1300
Nitrobenzene	ND	7300	ug/kg	1600
2-Nitrophenol	ND	7300	ug/kg	970
4-Nitrophenol	ND	35000	ug/kg	8600
N-Nitrosodi-n-propyl-amine	ND	7300	ug/kg	1600
N-Nitrosodiphenylamine	ND	7300	ug/kg	860
Pentachlorophenol	ND	35000	ug/kg	1400
Phenanthrene	**80000**	**7300**	**ug/kg**	**910**
Phenol	ND	7300	ug/kg	1200
Pyrene	**90000**	**7300**	**ug/kg**	**1200**
1,2,4-Trichloro-benzene	ND	7300	ug/kg	800
2,4,5-Trichloro-phenol	ND	7300	ug/kg	1000
2,4,6-Trichloro-phenol	ND	7300	ug/kg	910
Carbazole	**10000**	**7300**	**ug/kg**	**750**
Anthracene	**14000**	**7300**	**ug/kg**	**1400**

(Continued on next page)

EARTH TECH INC

Client Sample ID: SS03LD02

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-008 Work Order #...: FR3VJ2AA Matrix.....: SO

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	NC,DIL	(34 - 93)
Phenol-d5	NC,DIL	(30 - 96)
Nitrobenzene-d5	NC,DIL	(36 - 95)
2-Fluorobiphenyl	NC,DIL	(35 - 91)
2,4,6-Tribromophenol	NC,DIL	(21 - 98)
Terphenyl-d14	NC,DIL	(34 - 98)

NOTE(S):

NC The recovery and/or RPD were not calculated.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

EARTH TECH INC

Client Sample ID: EQPT.BLK.

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-009 Work Order #...: FR3VL1AA Matrix.....: WQ
Date Sampled...: 07/08/03 15:00 Date Received..: 07/10/03
Prep Date.....: 07/15/03 Analysis Date..: 07/21/03
Prep Batch #...: 3196146 Analysis Time..: 21:27
Dilution Factor: 1
Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acenaphthene	ND	10	ug/L	1.0
Acenaphthylene	ND	10	ug/L	1.0
Anthracene	ND	10	ug/L	1.6
Benzo(a)anthracene	ND	10	ug/L	1.2
Benzo(b)fluoranthene	ND	10	ug/L	2.2
Benzo(k)fluoranthene	ND	10	ug/L	2.0
Benzoic acid	ND	50	ug/L	12
Benzo(ghi)perylene	ND	10	ug/L	1.7
Benzo(a)pyrene	ND	10	ug/L	1.4
Benzyl alcohol	ND	10	ug/L	2.7
bis(2-Chloroethoxy) methane	ND	10	ug/L	1.3
bis(2-Chloroethyl)-ether	ND	10	ug/L	1.8
bis(2-Chloroisopropyl) ether	ND	10	ug/L	1.5
bis(2-Ethylhexyl) phthalate	3.3 J	10	ug/L	3.1
4-Bromophenyl phenyl ether	ND	10	ug/L	1.5
Butyl benzyl phthalate	ND	10	ug/L	1.6
4-Chloroaniline	ND	10	ug/L	2.5
4-Chloro-3-methylphenol	ND	10	ug/L	2.0
2-Chloronaphthalene	ND	10	ug/L	1.1
2-Chlorophenol	ND	10	ug/L	1.8
4-Chlorophenyl phenyl ether	ND	10	ug/L	1.2
Chrysene	ND	10	ug/L	1.7
Dibenz(a,h)anthracene	ND	10	ug/L	1.3
Dibenzofuran	ND	10	ug/L	5.0
Di-n-butyl phthalate	ND	10	ug/L	1.1
1,2-Dichlorobenzene	ND	10	ug/L	1.6
1,3-Dichlorobenzene	ND	10	ug/L	1.7
1,4-Dichlorobenzene	ND	10	ug/L	1.8
3,3'-Dichlorobenzidine	ND	50	ug/L	8.4
2,4-Dichlorophenol	ND	10	ug/L	2.4
Diethyl phthalate	ND	10	ug/L	1.1
2,4-Dimethylphenol	ND	10	ug/L	2.9

(Continued on next page)

EARTH TECH INC

Client Sample ID: EQPT.BLK.

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-009 Work Order #...: FR3VL1AA Matrix.....: WQ

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dimethyl phthalate	ND	10	ug/L	5.0
Di-n-octyl phthalate	ND	10	ug/L	1.5
4,6-Dinitro-2-methylphenol	ND	50	ug/L	18
2,4-Dinitrophenol	ND	50	ug/L	18
2,4-Dinitrotoluene	ND	10	ug/L	2.6
2,6-Dinitrotoluene	ND	10	ug/L	1.6
Fluoranthene	ND	10	ug/L	1.5
Fluorene	ND	10	ug/L	1.3
Hexachlorobenzene	ND	10	ug/L	1.7
Hexachlorobutadiene	ND	10	ug/L	1.7
Hexachlorocyclopentadiene	ND	50	ug/L	5.0
Hexachloroethane	ND	10	ug/L	2.2
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	1.2
Isophorone	ND	10	ug/L	2.3
2-Methylnaphthalene	ND	10	ug/L	1.5
2-Methylphenol	ND	10	ug/L	2.1
4-Methylphenol	ND	10	ug/L	2.1
Naphthalene	ND	10	ug/L	1.2
2-Nitroaniline	ND	50	ug/L	1.8
3-Nitroaniline	ND	50	ug/L	7.6
4-Nitroaniline	ND	50	ug/L	2.1
Nitrobenzene	ND	10	ug/L	2.5
2-Nitrophenol	ND	10	ug/L	1.8
4-Nitrophenol	ND	50	ug/L	18
N-Nitrosodi-n-propylamine	ND	10	ug/L	1.6
N-Nitrosodiphenylamine	ND	10	ug/L	1.5
Pentachlorophenol	ND	50	ug/L	11
Phenanthrene	ND	10	ug/L	1.3
Phenol	ND	10	ug/L	1.4
Pyrene	ND	10	ug/L	2.0
1,2,4-Trichlorobenzene	ND	10	ug/L	1.5
2,4,5-Trichlorophenol	ND	10	ug/L	1.3
2,4,6-Trichlorophenol	ND	10	ug/L	1.3
Carbazole	ND	10	ug/L	1.2

(Continued on next page)

EARTH TECH INC

Client Sample ID: EQPT.BLK.

GC/MS Semivolatiles

Lot-Sample #...: D3G100364-009 Work Order #...: FR3VL1AA Matrix.....: WQ

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	82	(49 - 106)
2-Fluorobiphenyl	72	(43 - 116)
2-Fluorophenol	70	(36 - 108)
Nitrobenzene-d5	74	(51 - 104)
Phenol-d5	76	(47 - 106)
Terphenyl-d14	95	(33 - 141)

NOTE(S):

J Estimated result. Result is less than RL.

EARTH TECH INC

Client Sample ID: SS03TK01

GC Semivolatiles

Lot-Sample #...: D3G100364-001 Work Order #...: FR3Q71AC Matrix.....: SO
Date Sampled...: 07/08/03 10:50 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197376 Analysis Time..: 19:11
Dilution Factor: 1
Method.....: SW846 8081A

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aldrin	ND	30	ug/kg	0.30
alpha-BHC	ND	22	ug/kg	0.27
beta-BHC	ND	44	ug/kg	0.30
delta-BHC	ND	66	ug/kg	0.68
gamma-BHC (Lindane)	ND	30	ug/kg	0.26
alpha-Chlordane	**1.1 J**	**1.9**	**ug/kg**	**0.25**
gamma-Chlordane	ND	1.9	ug/kg	0.58
Chlordane (technical)	ND	100	ug/kg	2.7
4,4'-DDD	ND	82	ug/kg	0.38
4,4'-DDE	**3.0 J,COL**	**30**	**ug/kg**	**0.48**
4,4'-DDT	**4.1 J**	**87**	**ug/kg**	**0.52**
Dieldrin	ND	15	ug/kg	0.26
Endosulfan I	ND	15	ug/kg	0.40
Endosulfan II	ND	30	ug/kg	0.46
Endosulfan sulfate	ND	490	ug/kg	0.44
Endrin	ND	44	ug/kg	0.45
Endrin aldehyde	ND	170	ug/kg	0.93
Endrin ketone	ND	3.6	ug/kg	0.37
Heptachlor	ND	22	ug/kg	0.34
Heptachlor epoxide	ND	59	ug/kg	0.24
Methoxychlor	ND	1300	ug/kg	0.86
Toxaphene	ND	1900	ug/kg	11

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	66	(62 - 125)
Tetrachloro-m-xylene	91	(52 - 131)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Undetected, analyzed for, but not detected

J Estimated result. Result is less than RL.

COL More than 40% RPD between primary and confirmation column results. The lower of the two results is reported.

EARTH TECH INC

Client Sample ID: SS03TK02

GC Semivolatiles

Lot-Sample #...: D3G100364-002 Work Order #...: FR3VC1AC Matrix.....: SO
Date Sampled...: 07/08/03 11:40 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197376 Analysis Time..: 19:25
Dilution Factor: 1
Method.....: SW846 8081A

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aldrin	ND	28	ug/kg	0.28
alpha-BHC	ND	21	ug/kg	0.26
beta-BHC	ND	42	ug/kg	0.28
delta-BHC	ND	63	ug/kg	0.65
gamma-BHC (Lindane)	ND	28	ug/kg	0.25
alpha-Chlordane	ND	1.8	ug/kg	0.24
gamma-Chlordane	ND	1.8	ug/kg	0.56
Chlordane (technical)	ND	100	ug/kg	2.6
4,4'-DDD	ND	79	ug/kg	0.37
4,4'-DDE	**2.0 J**	**28**	**ug/kg**	**0.46**
4,4'-DDT	**8.4 J**	**84**	**ug/kg**	**0.50**
Dieldrin	ND	15	ug/kg	0.25
Endosulfan I	ND	15	ug/kg	0.39
Endosulfan II	ND	28	ug/kg	0.44
Endosulfan sulfate	ND	470	ug/kg	0.42
Endrin	ND	42	ug/kg	0.43
Endrin aldehyde	ND	160	ug/kg	0.89
Endrin ketone	ND	3.5	ug/kg	0.36
Heptachlor	ND	21	ug/kg	0.33
Heptachlor epoxidé	ND	57	ug/kg	0.23
Methoxychlor	ND	1300	ug/kg	0.83
Toxaphene	ND	1800	ug/kg	11

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	91	(62 - 125)
Tetrachloro-m-xylene	95	(52 - 131)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Undetected, analyzed for, but not detected

J Estimated result. Result is less than RL.

EARTH TECH INC

Client Sample ID: SS03TK03

GC Semivolatiles

Lot-Sample #...: D3G100364-003 Work Order #...: FR3VD1AC Matrix.....: SO
Date Sampled...: 07/08/03 12:40 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197376 Analysis Time..: 19:54
Dilution Factor: 1
Method.....: SW846 8081A

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aldrin	ND	28	ug/kg	0.28
alpha-BHC	ND	21	ug/kg	0.26
beta-BHC	ND	42	ug/kg	0.28
delta-BHC	ND	62	ug/kg	0.65
gamma-BHC (Lindane)	ND	28	ug/kg	0.25
alpha-Chlordane	**0.64 J,COL**	**1.8**	**ug/kg**	**0.24**
gamma-Chlordane	ND	1.8	ug/kg	0.55
Chlordane (technical)	ND	99	ug/kg	2.6
4,4'-DDD	ND	78	ug/kg	0.36
4,4'-DDE	ND	28	ug/kg	0.46
4,4'-DDT	**0.94 J,COL**	**83**	**ug/kg**	**0.50**
Dieldrin	**0.31 J,COL**	**15**	**ug/kg**	**0.25**
Endosulfan I	ND	15	ug/kg	0.39
Endosulfan II	ND	28	ug/kg	0.44
Endosulfan sulfate	ND	470	ug/kg	0.42
Endrin	ND	42	ug/kg	0.43
Endrin aldehyde	ND	160	ug/kg	0.89
Endrin ketone	ND	3.4	ug/kg	0.35
Heptachlor	ND	21	ug/kg	0.32
Heptachlor epoxide	ND	56	ug/kg	0.23
Methoxychlor	ND	1200	ug/kg	0.82
Toxaphene	ND	1800	ug/kg	10

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	96	(62 - 125)
Tetrachloro-m-xylene	87	(52 - 131)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

U Undetected, analyzed for, but not detected

J Estimated result. Result is less than RL.

COL More than 40% RPD between primary and confirmation column results. The lower of the two results is reported.

EARTH TECH INC

Client Sample ID: SS03TK04

GC Semivolatiles

Lot-Sample #...: D3G100364-004 Work Order #...: FR3VE1AC Matrix.....: SO
Date Sampled...: 07/08/03 13:05 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197376 Analysis Time..: 20:09
Dilution Factor: 1
Method.....: SW846 8081A

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aldrin	ND	28	ug/kg	0.28
alpha-BHC	ND	21	ug/kg	0.26
beta-BHC	ND	42	ug/kg	0.28
delta-BHC	ND	63	ug/kg	0.65
gamma-BHC (Lindane)	ND	28	ug/kg	0.25
alpha-Chlordane	**0.34 J,COL**	**1.8**	**ug/kg**	**0.24**
gamma-Chlordane	ND	1.8	ug/kg	0.56
Chlordane (technical)	ND	100	ug/kg	2.6
4,4'-DDD	ND	79	ug/kg	0.37
4,4'-DDE	**0.73 J,COL**	**28**	**ug/kg**	**0.46**
4,4'-DDT	**2.9 J,COL**	**84**	**ug/kg**	**0.51**
Dieldrin	ND	15	ug/kg	0.25
Endosulfan I	ND	15	ug/kg	0.39
Endosulfan II	ND	28	ug/kg	0.44
Endosulfan sulfate	ND	470	ug/kg	0.42
Endrin	ND	42	ug/kg	0.43
Endrin aldehyde	ND	160	ug/kg	0.89
Endrin ketone	ND	3.5	ug/kg	0.36
Heptachlor	ND	21	ug/kg	0.33
Heptachlor epoxide	ND	57	ug/kg	0.23
Methoxychlor	ND	1300	ug/kg	0.83
Toxaphene	ND	1800	ug/kg	11

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	136 *	(62 - 125)
Tetrachloro-m-xylene	94	(52 - 131)

NOTE(S):

* Surrogate recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

Undetected, analyzed for, but not detected

J Estimated result. Result is less than RL.

COL More than 40% RPD between primary and confirmation column results. The lower of the two results is reported.

EARTH TECH INC

Client Sample ID: EQPT.BLK.

GC Semivolatiles

Lot-Sample #...: D3G100364-009 Work Order #...: FR3VL1AC Matrix.....: WQ
Date Sampled...: 07/08/03 15:00 Date Received..: 07/10/03
Prep Date.....: 07/14/03 Analysis Date..: 07/21/03
Prep Batch #...: 3195253 Analysis Time..: 13:28
Dilution Factor: 1
Method.....: SW846 8081A

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aldrin	ND	0.040	ug/L	0.0042
alpha-BHC	ND	0.030	ug/L	0.0076
beta-BHC	ND	0.060	ug/L	0.0051
delta-BHC	ND	0.090	ug/L	0.0050
gamma-BHC (Lindane)	ND	0.040	ug/L	0.0085
alpha-Chlordane	ND	0.050	ug/L	0.0054
gamma-Chlordane	ND	0.050	ug/L	0.0079
Chlordane (technical)	ND	0.14	ug/L	0.059
4,4'-DDD	ND	0.11	ug/L	0.0050
4,4'-DDE	ND	0.040	ug/L	0.015
4,4'-DDT	**0.013 J**	**0.12**	**ug/L**	**0.0095**
Dieldrin	ND	0.020	ug/L	0.0094
Endosulfan I	ND	0.020	ug/L	0.016
Endosulfan II	ND	0.040	ug/L	0.0074
Endosulfan sulfate	ND	0.66	ug/L	0.0063
Endrin	ND	0.060	ug/L	0.0086
Endrin aldehyde	ND	0.23	ug/L	0.014
Endrin ketone	ND	0.10	ug/L	0.0063
Heptachlor	ND	0.030	ug/L	0.0053
Heptachlor epoxide	ND	0.080	ug/L	0.0043
Methoxychlor	ND	1.8	ug/L	0.0048
Toxaphene	ND	2.5	ug/L	0.47

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	81	(71 - 127)
Tetrachloro-m-xylene	86	(61 - 115)

NOTE(S):

Undetected, analyzed for, but not detected

J Estimated result Result is less than RL

EARTH TECH INC

Client Sample ID: SS03TK01

GC Semivolatiles

Lot-Sample #...: D3G100364-001 Work Order #...: FR3Q71AD Matrix.....: SO
Date Sampled...: 07/08/03 10:50 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197380 Analysis Time..: 05:18
Dilution Factor: 1
Method.....: SW846 8141A

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Famphur	ND	14	ug/kg	2.4
Azinphos-methyl	ND	14	ug/kg	3.1
Chlorpyrifos	ND	14	ug/kg	2.6
Coumaphos	ND	14	ug/kg	3.2
Demeton (total)	ND	14	ug/kg	4.0
Diazinon	ND	14	ug/kg	2.2
Dichlorvos	ND	14	ug/kg	4.5
Thionazin	ND	14	ug/kg	2.5
Dimethoate	ND	14	ug/kg	2.2
Disulfoton	ND	14	ug/kg	2.0
Ethoprop	ND	14	ug/kg	2.6
Fensulfothion	ND	14	ug/kg	3.8
Fenthion	ND	14	ug/kg	5.2
Malathion	ND	14	ug/kg	2.0
Methyl parathion	ND	14	ug/kg	2.7
Mevinphos	ND	14	ug/kg	4.6
Ethyl parathion	ND	14	ug/kg	2.8
Phorate	ND	14	ug/kg	5.0
Ronnel	ND	14	ug/kg	2.0
Tetrachlorvinphos	ND	14	ug/kg	3.1
Sulfotepp	ND	14	ug/kg	2.3
Trichloronate	ND	14	ug/kg	3.0
Simazine	ND	73	ug/kg	5.5

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chlormefos	81	(60 - 113)
Ethyl Pirimifos	85	(36 - 119)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Undetected, analyzed for, but not detected

EARTH TECH INC

Client Sample ID: SS03TK02

GC Semivolatiles

Lot-Sample #...: D3G100364-002 Work Order #...: FR3VC1AD Matrix.....: SO
Date Sampled...: 07/08/03 11:40 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197380 Analysis Time..: 06:58
Dilution Factor: 1
Method.....: SW846 8141A

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Famphur	ND	14	ug/kg	2.3
Azinphos-methyl	ND	14	ug/kg	2.9
Chlorpyrifos	ND	14	ug/kg	2.5
Coumaphos	ND	14	ug/kg	3.0
Demeton (total)	ND	14	ug/kg	3.9
Diazinon	ND	14	ug/kg	2.1
Dichlorvos	ND	14	ug/kg	4.3
Thionazin	ND	14	ug/kg	2.4
Dimethoate	ND	14	ug/kg	2.1
Disulfoton	ND	14	ug/kg	1.9
Ethoprop	ND	14	ug/kg	2.5
Fensulfothion	ND	14	ug/kg	3.7
Fenthion	ND	14	ug/kg	5.0
Malathion	ND	14	ug/kg	1.9
Methyl parathion	ND	14	ug/kg	2.6
Mevinphos	ND	14	ug/kg	4.4
Ethyl parathion	ND	14	ug/kg	2.7
Phorate	ND	14	ug/kg	4.8
Ronnel	ND	14	ug/kg	1.9
Tetrachlorvinphos	ND	14	ug/kg	2.9
Sulfotepp	ND	14	ug/kg	2.2
Trichloronate	ND	14	ug/kg	2.8
Simazine	ND	70	ug/kg	5.3

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chlormefos	88	(60 - 113)
Ethyl Pirimifos	85	(36 - 119)

NOTE(S):

Results and reporting limits have been adjusted for dry weight

Undetected, analyzed for, but not detected

EARTH TECH INC

Client Sample ID: SS03TK03

GC Semivolatiles

Lot-Sample #...: D3G100364-003 Work Order #...: FR3VD1AD Matrix.....: SO
Date Sampled...: 07/08/03 12:40 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197380 Analysis Time..: 07:31
Dilution Factor: 1
Method.....: SW846 8141A

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Famphur	ND	14	ug/kg	2.3
Azinphos-methyl	ND	14	ug/kg	2.9
Chlorpyrifos	ND	14	ug/kg	2.5
Coumaphos	ND	14	ug/kg	3.0
Demeton (total)	ND	14	ug/kg	3.9
Diazinon	ND	14	ug/kg	2.1
Dichlorvos	ND	14	ug/kg	4.3
Thionazin	ND	14	ug/kg	2.4
Dimethoate	ND	14	ug/kg	2.1
Disulfoton	ND	14	ug/kg	1.9
Ethoprop	ND	14	ug/kg	2.5
Fensulfothion	ND	14	ug/kg	3.6
Fenthion	ND	14	ug/kg	5.0
Malathion	ND	14	ug/kg	1.9
Methyl parathion	ND	14	ug/kg	2.6
Mevinphos	ND	14	ug/kg	4.4
Ethyl parathion	ND	14	ug/kg	2.7
Phorate	ND	14	ug/kg	4.8
Ronnel	ND	14	ug/kg	1.9
Tetrachlorvinphos	ND	14	ug/kg	2.9
Sulfotepp	ND	14	ug/kg	2.2
Trichloronate	ND	14	ug/kg	2.8
Simazine	ND	70	ug/kg	5.2

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chlormefos	81	(60 - 113)
Ethyl Pirimifos	77	(36 - 119)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Undetected, analyzed for, but not detected

EARTH TECH INC

Client Sample ID: SS03TK04

GC Semivolatiles

Lot-Sample #...: D3G100364-004 Work Order #...: FR3VE1AD Matrix.....: SO
Date Sampled...: 07/08/03 13:05 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197380 Analysis Time..: 08:04
Dilution Factor: 1
Method.....: SW846 8141A

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Famphur	ND	14	ug/kg	2.3
Azinphos-methyl	ND	14	ug/kg	2.9
Chlorpyrifos	ND	14	ug/kg	2.5
Coumaphos	ND	14	ug/kg	3.1
Demeton (total)	ND	14	ug/kg	3.9
Diazinon	ND	14	ug/kg	2.1
Dichlorvos	ND	14	ug/kg	4.3
Thionazin	ND	14	ug/kg	2.4
Dimethoate	ND	14	ug/kg	2.1
Disulfoton	ND	14	ug/kg	1.9
Ethoprop	ND	14	ug/kg	2.5
Fensulfothion	ND	14	ug/kg	3.7
Fenthion	ND	14	ug/kg	5.1
Malathion	ND	14	ug/kg	1.9
Methyl parathion	ND	14	ug/kg	2.6
Mevinphos	ND	14	ug/kg	4.4
Ethyl parathion	ND	14	ug/kg	2.7
Phorate	ND	14	ug/kg	4.8
Ronnel	ND	14	ug/kg	1.9
Tetrachlorvinphos	ND	14	ug/kg	2.9
Sulfotepp	ND	14	ug/kg	2.2
Trichloronate	ND	14	ug/kg	2.8
Simazine	ND	70	ug/kg	5.3

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chlormefos	68	(60 - 113)
Ethyl Pirimifos	70	(36 - 119)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Undetected, analyzed for, but not detected

EARTH TECH INC

Client Sample ID: EQPT.BLK.

GC Semivolatiles

Lot-Sample #...: D3G100364-009 Work Order #...: FR3VL1AD Matrix.....: WQ
Date Sampled...: 07/08/03 15:00 Date Received..: 07/10/03
Prep Date.....: 07/15/03 Analysis Date..: 07/22/03
Prep Batch #...: 3196150 Analysis Time..: 23:15
Dilution Factor: 1
Method.....: SW846 8141A

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Famphur	ND	1.0	ug/L	0.054
Azinphos-methyl	ND	2.5	ug/L	0.14
Chlorpyrifos	ND	0.50	ug/L	0.054
Coumaphos	ND	0.50	ug/L	0.079
Demeton (total)	ND	1.0	ug/L	0.19
Diazinon	ND	0.50	ug/L	0.040
Dichlorvos	ND	0.50	ug/L	0.13
Thionazin	ND	0.50	ug/L	0.059
Dimethoate	ND	0.50	ug/L	0.18
Disulfoton	ND	0.50	ug/L	0.057
Ethoprop	ND	0.50	ug/L	0.056
Fensulfothion	ND	2.5	ug/L	0.22
Fenthion	ND	0.50	ug/L	0.061
Malathion	ND	1.2	ug/L	0.050
Methyl parathion	ND	0.50	ug/L	0.061
Mevinphos	ND	6.2	ug/L	0.16
Ethyl parathion	ND	0.50	ug/L	0.040
Phorate	ND	0.50	ug/L	0.075
Ronnel	ND	10	ug/L	0.11
Tetrachlorvinphos	ND	2.5	ug/L	0.056
Sulfotepp	ND	0.50	ug/L	0.030
Trichloronate	ND	0.50	ug/L	0.057
Simazine	ND	10	ug/L	0.46

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chlormefos	84	(61 - 102)
Ethyl Pirimifos	80	(10 - 126)

NOTE(S):

Undetected, analyzed for, but not detected

EARTH TECH INC

Client Sample ID: SS03TK01

HPLC

Lot-Sample #...:	D3G100364-001	Work Order #...:	FR3Q71AA	Matrix.....:	SO
Date Sampled...:	07/08/03 10:50	Date Received..:	07/10/03		
Prep Date.....:	07/22/03	Analysis Date..:	07/25/03		
Prep Batch #...:	3203571	Analysis Time..:	06:29		
Dilution Factor:	1				
		Method.....:	SW846 8321A		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
2,4-D	ND	220	ug/kg	0.40
Dalapon	ND	440	ug/kg	0.97
2,4-DB	ND	220	ug/kg	0.37
Dicamba	**2.3 F**	**330**	**ug/kg**	**0.38**
Dichlorprop	ND	220	ug/kg	0.45
Dinoseb	ND	110	ug/kg	0.35
MCPA	ND	220	ug/kg	2.8
MCPP	ND	220	ug/kg	1.2
2,4,5-TP (Silvex)	ND	220	ug/kg	0.42
2,4,5-T	ND	220	ug/kg	0.36

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
DCAA	100	(25 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

F The analyte was identified but the value was below the RL and above the MDL.

EARTH TECH INC

Client Sample ID: SS03TK02

HPLC

Lot-Sample #...: D3G100364-002 Work Order #...: FR3VC1AA Matrix.....: SO
Date Sampled...: 07/08/03 11:40 Date Received..: 07/10/03
Prep Date.....: 07/22/03 Analysis Date..: 07/25/03
Prep Batch #...: 3203571 Analysis Time..: 08:05
Dilution Factor: 1
Method.....: SW846 8321A

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
2,4-D	ND	210	ug/kg	0.39
Dalapon	ND	420	ug/kg	0.94
2,4-DB	ND	210	ug/kg	0.36
Dicamba	ND	320	ug/kg	0.37
Dichlorprop	ND	210	ug/kg	0.43
Dinoseb	ND	110	ug/kg	0.34
MCPA	ND	210	ug/kg	2.7
MCPP	ND	210	ug/kg	1.2
2,4,5-TP (Silvex)	ND	210	ug/kg	0.40
2,4,5-T	ND	210	ug/kg	0.35

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
DCAA	101	(25 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

EARTH TECH INC

Client Sample ID: SS03TK03

HPLC

Lot-Sample #...: D3G100364-003 Work Order #...: FR3VD1AA Matrix.....: SO
Date Sampled...: 07/08/03 12:40 Date Received..: 07/10/03
Prep Date.....: 07/22/03 Analysis Date..: 07/25/03
Prep Batch #...: 3203571 Analysis Time..: 08:37
Dilution Factor: 1
Method.....: SW846 8321A

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
2,4-D	**0.42 F**	**210**	**ug/kg**	**0.39**
Dalapon	ND	420	ug/kg	0.93
2,4-DB	ND	210	ug/kg	0.35
Dicamba	**1.7 F**	**310**	**ug/kg**	**0.36**
Dichlorprop	ND	210	ug/kg	0.43
Dinoseb	ND	100	ug/kg	0.33
MCPA	ND	210	ug/kg	2.7
MCPP	ND	210	ug/kg	1.1
2,4,5-TP (Silvex)	ND	210	ug/kg	0.40
2,4,5-T	ND	210	ug/kg	0.34

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
DCAA	99	(25 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

F The analyte was identified but the value was below the RL and above the MDL.

EARTH TECH INC

Client Sample ID: SS03TK04

HPLC

Lot-Sample #...: D3G100364-004 Work Order #...: FR3VE1AA Matrix.....: SO
Date Sampled...: 07/08/03 13:05 Date Received..: 07/10/03
Prep Date.....: 07/22/03 Analysis Date..: 07/25/03
Prep Batch #...: 3203571 Analysis Time..: 09:09
Dilution Factor: 1
Method.....: SW846 8321A

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
2,4-D	ND	210	ug/kg	0.39
Dalapon	ND	420	ug/kg	0.94
2,4-DB	ND	210	ug/kg	0.36
Dicamba	**1.7 F**	**320**	**ug/kg**	**0.37**
Dichlorprop	ND	210	ug/kg	0.43
Dinoseb	ND	110	ug/kg	0.34
MCPA	ND	210	ug/kg	2.7
MCPP	ND	210	ug/kg	1.2
2,4,5-TP (Silvex)	ND	210	ug/kg	0.40
2,4,5-T	ND	210	ug/kg	0.35

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
DCAA	117	(25 - 140)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

F The analyte was identified but the value was below the RL and above the MDL.

EARTH TECH INC

Client Sample ID: EQPT.BLK.

HPLC

Lot-Sample #...: D3G100364-009 Work Order #...: FR3VL1AE Matrix.....: WQ
Date Sampled...: 07/08/03 15:00 Date Received..: 07/10/03
Prep Date.....: 07/14/03 Analysis Date..: 07/15/03
Prep Batch #...: 3195283 Analysis Time..: 14:42
Dilution Factor: 1
Method.....: SW846 8321A

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
2,4-D	ND	5.0	ug/L	0.28
Dalapon	ND	5.0	ug/L	0.49
2,4-DB	ND	5.0	ug/L	0.35
Dicamba	ND	5.0	ug/L	0.35
Dichlorprop	ND	5.0	ug/L	0.16
Dinoseb	ND	5.0	ug/L	0.33
MCPA	ND	5.0	ug/L	0.32
MCPP	ND	5.0	ug/L	0.22
2,4,5-TP (Silvex)	ND	5.0	ug/L	0.37
2,4,5-T	ND	5.0	ug/L	0.32

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
DCAA	88	(25 - 125)

EARTH TECH INC

Client Sample ID: SS03TK01

General Chemistry

Lot-Sample #...: D3G100364-001 Work Order #...: FR3Q7 Matrix.....: SO
Date Sampled...: 07/08/03 10:50 Date Received..: 07/10/03

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Moisture	8.5	0.10	%	MCAWW 160.3 MOD	07/22/03	3204280

Dilution Factor: 1 Analysis Time..: 12:15 MDL.....:

EARTH TECH INC

Client Sample ID: SS03TK02

General Chemistry

Lot-Sample #...: D3G100364-002 Work Order #...: FR3VC Matrix.....: SO
Date Sampled...: 07/08/03 11:40 Date Received..: 07/10/03

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Moisture	4.9	0.10	%	MCAWW 160.3 MOD	07/22/03	3204280

Dilution Factor: 1 Analysis Time..: 12:15 MDL.....:

EARTH TECH INC

Client Sample ID: SS03TK03

General Chemistry

Lot-Sample #...: D3G100364-003 Work Order #...: FR3VD Matrix.....: SO
Date Sampled...: 07/08/03 12:40 Date Received..: 07/10/03

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Moisture	4.0	0.10	%	MCAWW 160.3 MOD	07/22/03	3204280

Dilution Factor: 1 Analysis Time..: 12:15 MDL.....:

EARTH TECH INC

Client Sample ID: SS03TK04

General Chemistry

Lot-Sample #...: D3G100364-004 Work Order #...: FR3VE Matrix.....: SO
Date Sampled...: 07/08/03 13:05 Date Received..: 07/10/03

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Moisture	5.0	0.10	%	MCAWW 160.3 MOD	07/22/03	3204280

Dilution Factor: 1 Analysis Time..: 12:15 MDL.....:

EARTH TECH INC

Client Sample ID: SS03LD03

General Chemistry

Lot-Sample #...: D3G100364-005 Work Order #...: FR3VF Matrix.....: SO
Date Sampled...: 07/08/03 13:35 Date Received..: 07/10/03

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Moisture	11	0.10	%	MCAWW 160.3 MOD	07/22/03	3204280

Dilution Factor: 1 Analysis Time..: 12:15 MDL.....:

EARTH TECH INC

Client Sample ID: SS03LD04

General Chemistry

Lot-Sample #...: D3G100364-006 Work Order #...: FR3VG Matrix.....: SO
Date Sampled...: 07/08/03 13:50 Date Received..: 07/10/03

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Moisture	6.2	0.10	%	MCAWW 160.3 MOD	07/22/03	3204280

Dilution Factor: 1 Analysis Time..: 12:15 MDL.....:

EARTH TECH INC

Client Sample ID: SS03LD01

General Chemistry

Lot-Sample #...: D3G100364-007 Work Order #...: FR3VH Matrix.....: SO
Date Sampled...: 07/08/03 14:20 Date Received..: 07/10/03

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Moisture	4.3	0.10	%	MCAWW 160.3 MOD	07/22/03	3204280

Dilution Factor: 1 Analysis Time..: 12:15 MDL.....:

EARTH TECH INC

Client Sample ID: SS03LD02

General Chemistry

Lot-Sample #...: D3G100364-008 Work Order #...: FR3VJ Matrix.....: SO
Date Sampled...: 07/08/03 14:30 Date Received..: 07/10/03

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Moisture	9.7	0.10	%	MCAWW 160.3 MOD	07/22/03	3204280
	Dilution Factor: 1			Analysis Time..: 12:15	MDL.....:	

QC DATA ASSOCIATION SUMMARY

D3G100364

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	SO	SW846 8321A		3203571	3203296
	SO	SW846 8141A		3197380	3197183
	SO	SW846 8081A		3197376	3197184
	SO	SW846 8270C		3197382	3197193
	SO	MCAWW 160.3 MOD		3204280	3204135
002	SO	SW846 8321A		3203571	3203296
	SO	SW846 8141A		3197380	3197183
	SO	SW846 8081A		3197376	3197184
	SO	SW846 8270C		3197382	3197193
	SO	MCAWW 160.3 MOD		3204280	3204135
003	SO	SW846 8321A		3203571	3203296
	SO	SW846 8141A		3197380	3197183
	SO	SW846 8081A		3197376	3197184
	SO	SW846 8270C		3197382	3197193
	SO	MCAWW 160.3 MOD		3204280	3204135
004	SO	SW846 8321A		3203571	3203296
	SO	SW846 8141A		3197380	3197183
	SO	SW846 8081A		3197376	3197184
	SO	SW846 8270C		3197382	3197193
	SO	MCAWW 160.3 MOD		3204280	3204135
005	SO	SW846 8270C		3197382	3197193
	SO	MCAWW 160.3 MOD		3204280	3204135
006	SO	SW846 8270C		3197382	3197193
	SO	MCAWW 160.3 MOD		3204280	3204135
007	SO	SW846 8270C		3197382	3197193
	SO	MCAWW 160.3 MOD		3204280	3204135
008	SO	SW846 8270C		3197382	3197193
	SO	MCAWW 160.3 MOD		3204280	3204135
009	WQ	SW846 8321A		3195283	3195135
	WQ	SW846 8141A		3196150	
	WQ	SW846 8081A		3195253	
	WQ	SW846 8270C		3196146	

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTEJP1AA Matrix.....: SOLID
MB Lot-Sample #: D3G160000-382

Prep Date.....: 07/16/03 Analysis Time..: 19:06
Analysis Date..: 07/21/03 Prep Batch #...: 3197382
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	330	ug/kg	SW846 8270C
Acenaphthylene	ND	330	ug/kg	SW846 8270C
Anthracene	ND	330	ug/kg	SW846 8270C
Benzo(a)anthracene	ND	330	ug/kg	SW846 8270C
Benzo(b)fluoranthene	ND	330	ug/kg	SW846 8270C
Benzo(k)fluoranthene	ND	330	ug/kg	SW846 8270C
Benzoic acid	ND	1600	ug/kg	SW846 8270C
Benzo(ghi)perylene	ND	330	ug/kg	SW846 8270C
Benzo(a)pyrene	ND	330	ug/kg	SW846 8270C
Benzyl alcohol	ND	330	ug/kg	SW846 8270C
bis(2-Chloroethoxy) methane	ND	330	ug/kg	SW846 8270C
bis(2-Chloroethyl)- ether	ND	330	ug/kg	SW846 8270C
bis(2-Chloroisopropyl) ether	ND	330	ug/kg	SW846 8270C
bis(2-Ethylhexyl) phthalate	ND	330	ug/kg	SW846 8270C
4-Bromophenyl phenyl ether	ND	330	ug/kg	SW846 8270C
Butyl benzyl phthalate	ND	330	ug/kg	SW846 8270C
4-Chloroaniline	ND	330	ug/kg	SW846 8270C
4-Chloro-3-methylphenol	ND	330	ug/kg	SW846 8270C
2-Chloronaphthalene	ND	330	ug/kg	SW846 8270C
2-Chlorophenol	ND	330	ug/kg	SW846 8270C
4-Chlorophenyl phenyl ether	ND	330	ug/kg	SW846 8270C
Chrysene	ND	330	ug/kg	SW846 8270C
Dibenz(a,h)anthracene	ND	330	ug/kg	SW846 8270C
Dibenzofuran	ND	330	ug/kg	SW846 8270C
Di-n-butyl phthalate	ND	330	ug/kg	SW846 8270C
1,2-Dichlorobenzene	ND	330	ug/kg	SW846 8270C
1,3-Dichlorobenzene	ND	330	ug/kg	SW846 8270C
1,4-Dichlorobenzene	ND	330	ug/kg	SW846 8270C
3,3'-Dichlorobenzidine	ND	1600	ug/kg	SW846 8270C
2,4-Dichlorophenol	ND	330	ug/kg	SW846 8270C
Diethyl phthalate	ND	660	ug/kg	SW846 8270C
2,4-Dimethylphenol	ND	330	ug/kg	SW846 8270C
Dimethyl phthalate	ND	330	ug/kg	SW846 8270C
Di-n-octyl phthalate	ND	330	ug/kg	SW846 8270C
4,6-Dinitro- 2-methylphenol	ND	1600	ug/kg	SW846 8270C

(Continued on next page)

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTEJP1AA Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
2,4-Dinitrophenol	ND	1600	ug/kg	SW846 8270C
2,4-Dinitrotoluene	ND	330	ug/kg	SW846 8270C
2,6-Dinitrotoluene	ND	330	ug/kg	SW846 8270C
Fluoranthene	ND	330	ug/kg	SW846 8270C
Fluorene	ND	330	ug/kg	SW846 8270C
Hexachlorobenzene	ND	330	ug/kg	SW846 8270C
Hexachlorobutadiene	ND	330	ug/kg	SW846 8270C
Hexachlorocyclopenta-diene	ND	1600	ug/kg	SW846 8270C
Hexachloroethane	ND	330	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	330	ug/kg	SW846 8270C
Isophorone	ND	330	ug/kg	SW846 8270C
2-Methylnaphthalene	ND	330	ug/kg	SW846 8270C
2-Methylphenol	ND	330	ug/kg	SW846 8270C
4-Methylphenol	ND	330	ug/kg	SW846 8270C
Naphthalene	ND	330	ug/kg	SW846 8270C
2-Nitroaniline	ND	1600	ug/kg	SW846 8270C
3-Nitroaniline	ND	1600	ug/kg	SW846 8270C
4-Nitroaniline	ND	1600	ug/kg	SW846 8270C
Nitrobenzene	ND	330	ug/kg	SW846 8270C
2-Nitrophenol	ND	330	ug/kg	SW846 8270C
4-Nitrophenol	ND	1600	ug/kg	SW846 8270C
N-Nitrosodi-n-propyl-amine	ND	330	ug/kg	SW846 8270C
N-Nitrosodiphenylamine	ND	330	ug/kg	SW846 8270C
Pentachlorophenol	ND	1600	ug/kg	SW846 8270C
Phenanthrene	ND	330	ug/kg	SW846 8270C
Phenol	ND	330	ug/kg	SW846 8270C
Pyrene	ND	330	ug/kg	SW846 8270C
1,2,4-Trichloro-benzene	ND	330	ug/kg	SW846 8270C
2,4,5-Trichloro-phenol	ND	330	ug/kg	SW846 8270C
2,4,6-Trichloro-phenol	ND	330	ug/kg	SW846 8270C
Carbazole	ND	330	ug/kg	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	79	(34 - 93)
Phenol-d5	76	(30 - 96)
Nitrobenzene-d5	74	(36 - 95)
2-Fluorobiphenyl	74	(35 - 91)
2,4,6-Tribromophenol	73	(21 - 98)
Terphenyl-d14	93	(34 - 98)

(Continued on next page)

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTEJP1AA Matrix.....: SOLID

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTEJP1AC-LCS Matrix.....: SOLID
LCS Lot-Sample#: D3G160000-382 FTEJP1AD-LCSD
Prep Date.....: 07/16/03 Analysis Date..: 07/21/03
Prep Batch #...: 3197382 Analysis Time..: 19:30
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acenaphthene	67	(46 - 88)			SW846 8270C
	66	(46 - 88)	1.2	(0-40)	SW846 8270C
4-Chloro-3-methylphenol	70	(47 - 96)			SW846 8270C
	70	(47 - 96)	0.50	(0-40)	SW846 8270C
2-Chlorophenol	69	(48 - 92)			SW846 8270C
	68	(48 - 92)	1.1	(0-36)	SW846 8270C
1,4-Dichlorobenzene	64	(44 - 83)			SW846 8270C
	63	(44 - 83)	1.9	(0-40)	SW846 8270C
2,4-Dinitrotoluene	71	(40 - 101)			SW846 8270C
	78	(40 - 101)	9.2	(0-40)	SW846 8270C
4-Nitrophenol	68	(24 - 107)			SW846 8270C
	75	(24 - 107)	11	(0-40)	SW846 8270C
N-Nitrosodi-n-propyl-amine	66	(43 - 92)			SW846 8270C
	64	(43 - 92)	2.0	(0-40)	SW846 8270C
Pentachlorophenol	64	(26 - 95)			SW846 8270C
	74	(26 - 95)	15	(0-40)	SW846 8270C
Phenol	71	(47 - 91)			SW846 8270C
	70	(47 - 91)	1.2	(0-37)	SW846 8270C
Pyrene	77	(42 - 91)			SW846 8270C
	84	(42 - 91)	8.4	(0-40)	SW846 8270C
1,2,4-Trichloro-benzene	68	(44 - 86)			SW846 8270C
	67	(44 - 86)	1.2	(0-40)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	72	(49 - 90)
	70	(49 - 90)
Phenol-d5	70	(50 - 91)
	69	(50 - 91)
Nitrobenzene-d5	68	(47 - 95)
	66	(47 - 95)
2-Fluorobiphenyl	67	(44 - 92)
	68	(44 - 92)
2,4,6-Tribromophenol	74	(41 - 100)
	78	(41 - 100)
Terphenyl-d14	87	(48 - 98)

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTEJP1AC-LCS Matrix.....: SOLID
LCS Lot-Sample#: D3G160000-382 FTEJP1AD-LCSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
	93	(48 - 98)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTEJP1AC-LCS Matrix.....: SOLID
LCS Lot-Sample#: D3G160000-382 FTEJP1AD-LCSD
Prep Date.....: 07/16/03 Analysis Date..: 07/21/03
Prep Batch #...: 3197382 Analysis Time..: 19:30
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Acenaphthene	3330	2240	ug/kg	67		SW846 8270C
	3330	2210	ug/kg	66	1.2	SW846 8270C
4-Chloro-3-methylphenol	5000	3510	ug/kg	70		SW846 8270C
	5000	3490	ug/kg	70	0.50	SW846 8270C
2-Chlorophenol	5000	3440	ug/kg	69		SW846 8270C
	5000	3410	ug/kg	68	1.1	SW846 8270C
1,4-Dichlorobenzene	3330	2130	ug/kg	64		SW846 8270C
	3330	2090	ug/kg	63	1.9	SW846 8270C
2,4-Dinitrotoluene	3330	2380	ug/kg	71		SW846 8270C
	3330	2610	ug/kg	78	9.2	SW846 8270C
4-Nitrophenol	5000	3380	ug/kg	68		SW846 8270C
	5000	3760	ug/kg	75	11	SW846 8270C
N-Nitrosodi-n-propyl-amine	3330	2190	ug/kg	66		SW846 8270C
	3330	2140	ug/kg	64	2.0	SW846 8270C
Pentachlorophenol	5000	3200	ug/kg	64		SW846 8270C
	5000	3700	ug/kg	74	15	SW846 8270C
Phenol	5000	3540	ug/kg	71		SW846 8270C
	5000	3500	ug/kg	70	1.2	SW846 8270C
Pyrene	3330	2580	ug/kg	77		SW846 8270C
	3330	2800	ug/kg	84	8.4	SW846 8270C
1,2,4-Trichloro-benzene	3330	2260	ug/kg	68		SW846 8270C
	3330	2240	ug/kg	67	1.2	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	72	(49 - 90)
	70	(49 - 90)
Phenol-d5	70	(50 - 91)
	69	(50 - 91)
Nitrobenzene-d5	68	(47 - 95)
	66	(47 - 95)
2-Fluorobiphenyl	67	(44 - 92)
	68	(44 - 92)
2,4,6-Tribromophenol	74	(41 - 100)
	78	(41 - 100)
Terphenyl-d14	87	(48 - 98)

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTEJP1AC-LCS Matrix.....: SOLID
LCS Lot-Sample#: D3G160000-382 FTEJP1AD-LCSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
	93	(48 - 98)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FR3VJ1AD-MS Matrix.....: SO
MS Lot-Sample #: D3G100364-008 FR3VJ1AE-MSD
Date Sampled...: 07/08/03 14:30 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/22/03
Prep Batch #...: 3197382 Analysis Time..: 00:56
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acenaphthene	124 a	(35 - 89)			SW846 8270C
	102 a	(35 - 89)	5.5	(0-40)	SW846 8270C
4-Chloro-3-methylphenol	66	(31 - 96)			SW846 8270C
	78	(31 - 96)	16	(0-40)	SW846 8270C
2-Chlorophenol	64	(35 - 90)			SW846 8270C
	73	(35 - 90)	13	(0-40)	SW846 8270C
1,4-Dichlorobenzene	57	(33 - 81)			SW846 8270C
	64	(33 - 81)	12	(0-40)	SW846 8270C
2,4-Dinitrotoluene	68	(27 - 104)			SW846 8270C
	82	(27 - 104)	18	(0-40)	SW846 8270C
4-Nitrophenol	92	(11 - 107)			SW846 8270C
	106	(11 - 107)	14	(0-40)	SW846 8270C
N-Nitrosodi-n-propyl-amine	63	(34 - 91)			SW846 8270C
	72	(34 - 91)	13	(0-40)	SW846 8270C
Pentachlorophenol	44	(10 - 98)			SW846 8270C
	55	(10 - 98)	23	(0-40)	SW846 8270C
Phenol	67	(26 - 98)			SW846 8270C
	75	(26 - 98)	11	(0-40)	SW846 8270C
Pyrene	30	(16 - 106)			SW846 8270C
	11 a	(16 - 106)	1.7	(0-40)	SW846 8270C
1,2,4-Trichloro-benzene	64	(33 - 86)			SW846 8270C
	73	(33 - 86)	13	(0-40)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	68	(34 - 93)
	78	(34 - 93)
Phenol-d5	66	(30 - 96)
	75	(30 - 96)
Nitrobenzene-d5	63	(36 - 95)
	70	(36 - 95)
2-Fluorobiphenyl	66	(35 - 91)
	74	(35 - 91)
2,4,6-Tribromophenol	69	(21 - 98)
	82	(21 - 98)

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FR3VJ1AD-MS Matrix.....: SO
MS Lot-Sample #: D3G100364-008 FR3VJ1AE-MSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Terphenyl-d14	66	(34 - 98)
	78	(34 - 98)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FR3VJ1AD-MS Matrix.....: SO
MS Lot-Sample #: D3G100364-008 FR3VJ1AE-MSD
Date Sampled...: 07/08/03 14:30 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/22/03
Prep Batch #...: 3197382 Analysis Time..: 00:56
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Acenaphthene	11000	3690	15100	ug/kg	124 a		SW846 8270C
	11000	3690	14300	ug/kg	102 a	5.5	SW846 8270C
4-Chloro-3-methylphenol	ND	5540	3670	ug/kg	66		SW846 8270C
	ND	5540	4310	ug/kg	78	16	SW846 8270C
2-Chlorophenol	ND	5540	3560	ug/kg	64		SW846 8270C
	ND	5540	4060	ug/kg	73	13	SW846 8270C
1,4-Dichlorobenzene	ND	3690	2090	ug/kg	57		SW846 8270C
	ND	3690	2350	ug/kg	64	12	SW846 8270C
2,4-Dinitrotoluene	ND	3690	2530	ug/kg	68		SW846 8270C
	ND	3690	3030	ug/kg	82	18	SW846 8270C
4-Nitrophenol	ND	5540	5110	ug/kg	92		SW846 8270C
	ND	5540	5870	ug/kg	106	14	SW846 8270C
N-Nitrosodi-n-propyl-amine	ND	3690	2320	ug/kg	63		SW846 8270C
	ND	3690	2650	ug/kg	72	13	SW846 8270C
Pentachlorophenol	ND	5540	2430	ug/kg	44		SW846 8270C
	ND	5540	3040	ug/kg	55	23	SW846 8270C
Phenol	140	5540	3830	ug/kg	67		SW846 8270C
	140	5540	4300	ug/kg	75	11	SW846 8270C
Pyrene	38000	3690	39400	ug/kg	30		SW846 8270C
	38000	3690	38700	ug/kg	11 a	1.7	SW846 8270C
1,2,4-Trichloro-benzene	ND	3690	2380	ug/kg	64		SW846 8270C
	ND	3690	2700	ug/kg	73	13	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	68	(34 - 93)
	78	(34 - 93)
Phenol-d5	66	(30 - 96)
	75	(30 - 96)
Nitrobenzene-d5	63	(36 - 95)
	70	(36 - 95)
2-Fluorobiphenyl	66	(35 - 91)
	74	(35 - 91)
2,4,6-Tribromophenol	69	(21 - 98)
	82	(21 - 98)

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FR3VJ1AD-MS Matrix.....: SO
MS Lot-Sample #: D3G100364-008 FR3VJ1AE-MSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Terphenyl-d14	66	(34 - 98)
	78	(34 - 98)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTCG81AA Matrix.....: WATER
MB Lot-Sample #: D3G150000-146

Prep Date.....: 07/15/03 Analysis Time..: 20:17
Analysis Date..: 07/21/03 Prep Batch #...: 3196146
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
Benzoic acid	ND	50	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzyl alcohol	ND	10	ug/L	SW846 8270C
bis(2-Chloroethoxy) methane	ND	10	ug/L	SW846 8270C
bis(2-Chloroethyl)- ether	ND	10	ug/L	SW846 8270C
bis(2-Chloroisopropyl) ether	ND	10	ug/L	SW846 8270C
bis(2-Ethylhexyl) phthalate	ND	10	ug/L	SW846 8270C
4-Bromophenyl phenyl ether	ND	10	ug/L	SW846 8270C
Butyl benzyl phthalate	ND	10	ug/L	SW846 8270C
4-Chloroaniline	ND	10	ug/L	SW846 8270C
4-Chloro-3-methylphenol	ND	10	ug/L	SW846 8270C
2-Chloronaphthalene	ND	10	ug/L	SW846 8270C
2-Chlorophenol	ND	10	ug/L	SW846 8270C
4-Chlorophenyl phenyl ether	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenz(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Di-n-butyl phthalate	ND	10	ug/L	SW846 8270C
1,2-Dichlorobenzene	ND	10	ug/L	SW846 8270C
1,3-Dichlorobenzene	ND	10	ug/L	SW846 8270C
1,4-Dichlorobenzene	ND	10	ug/L	SW846 8270C
3,3'-Dichlorobenzidine	ND	50	ug/L	SW846 8270C
2,4-Dichlorophenol	ND	10	ug/L	SW846 8270C
Diethyl phthalate	ND	10	ug/L	SW846 8270C
2,4-Dimethylphenol	ND	10	ug/L	SW846 8270C
Dimethyl phthalate	ND	10	ug/L	SW846 8270C
Di-n-octyl phthalate	ND	10	ug/L	SW846 8270C
4,6-Dinitro- 2-methylphenol	ND	50	ug/L	SW846 8270C

(Continued on next page)

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTCG81AA Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
2,4-Dinitrophenol	ND	50	ug/L	SW846 8270C
2,4-Dinitrotoluene	ND	10	ug/L	SW846 8270C
2,6-Dinitrotoluene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Hexachlorobenzene	ND	10	ug/L	SW846 8270C
Hexachlorobutadiene	ND	10	ug/L	SW846 8270C
Hexachlorocyclopenta-diene	ND	50	ug/L	SW846 8270C
Hexachloroethane	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Isophorone	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
2-Methylphenol	ND	10	ug/L	SW846 8270C
4-Methylphenol	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
2-Nitroaniline	ND	50	ug/L	SW846 8270C
3-Nitroaniline	ND	50	ug/L	SW846 8270C
4-Nitroaniline	ND	50	ug/L	SW846 8270C
Nitrobenzene	ND	10	ug/L	SW846 8270C
2-Nitrophenol	ND	10	ug/L	SW846 8270C
4-Nitrophenol	ND	50	ug/L	SW846 8270C
N-Nitrosodi-n-propyl-amine	ND	10	ug/L	SW846 8270C
N-Nitrosodiphenylamine	ND	10	ug/L	SW846 8270C
Pentachlorophenol	ND	50	ug/L	SW846 8270C
Phenanthrene	ND	10	ug/L	SW846 8270C
Phenol	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
1,2,4-Trichloro-benzene	ND	10	ug/L	SW846 8270C
2,4,5-Trichloro-phenol	ND	10	ug/L	SW846 8270C
2,4,6-Trichloro-phenol	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	94	(49 - 106)
2-Fluorobiphenyl	79	(43 - 116)
2-Fluorophenol	87	(36 - 108)
Nitrobenzene-d5	86	(51 - 104)
Phenol-d5	88	(47 - 106)
Terphenyl-d14	93	(33 - 141)

(Continued on next page)

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTCG81AA Matrix.....: WATER

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTCG81AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G150000-146 FTCG81AD-LCSD
Prep Date.....: 07/15/03 Analysis Date..: 07/21/03
Prep Batch #...: 3196146 Analysis Time..: 20:40
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
1,2,4-Trichloro-benzene	87	(44 - 142)			SW846 8270C
	89	(44 - 142)	2.0	(0-27)	SW846 8270C
1,2-Dichlorobenzene	88	(60 - 104)			SW846 8270C
	88	(60 - 104)	0.66	(0-33)	SW846 8270C
1,3-Dichlorobenzene	85	(60 - 99)			SW846 8270C
	84	(60 - 99)	0.52	(0-35)	SW846 8270C
1,4-Dichlorobenzene	84	(20 - 124)			SW846 8270C
	85	(20 - 124)	1.7	(0-27)	SW846 8270C
2,4-Dinitrotoluene	93	(55 - 116)			SW846 8270C
	101	(55 - 116)	8.8	(0-21)	SW846 8270C
2,6-Dinitrotoluene	91	(50 - 128)			SW846 8270C
	97	(50 - 128)	7.0	(0-42)	SW846 8270C
2-Chloronaphthalene	87	(60 - 118)			SW846 8270C
	92	(60 - 118)	5.5	(0-30)	SW846 8270C
2-Methylnaphthalene	90	(59 - 100)			SW846 8270C
	94	(59 - 100)	4.9	(0-24)	SW846 8270C
2-Nitroaniline	87	(70 - 108)			SW846 8270C
	95	(70 - 108)	9.2	(0-28)	SW846 8270C
3,3'-Dichlorobenzidine	69	(59 - 105)			SW846 8270C
	78	(59 - 105)	12	(0-30)	SW846 8270C
3-Nitroaniline	71 a	(72 - 105)			SW846 8270C
	74	(72 - 105)	4.1	(0-31)	SW846 8270C
4-Bromophenyl phenyl ether	93	(53 - 127)			SW846 8270C
	97	(53 - 127)	4.0	(0-23)	SW846 8270C
4-Chloroaniline	71	(58 - 99)			SW846 8270C
	67	(58 - 99)	5.5	(0-36)	SW846 8270C
4-Chlorophenyl phenyl ether	91	(25 - 158)			SW846 8270C
	97	(25 - 158)	6.9	(0-28)	SW846 8270C
4-Methylphenol	91	(63 - 105)			SW846 8270C
	92	(63 - 105)	0.42	(0-45)	SW846 8270C
4-Nitroaniline	85	(50 - 151)			SW846 8270C
	96	(50 - 151)	12	(0-35)	SW846 8270C
Acenaphthylene	86	(33 - 145)			SW846 8270C
	91	(33 - 145)	5.6	(0-28)	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTCG81AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G150000-146 FTCG81AD-LCSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acenaphthene	85	(47 - 145)			SW846 8270C
	90	(47 - 145)	6.0	(0-20)	SW846 8270C
Anthracene	89	(65 - 105)			SW846 8270C
	94	(65 - 105)	4.8	(0-28)	SW846 8270C
Benzo(a)anthracene	79	(63 - 110)			SW846 8270C
	90	(63 - 110)	13	(0-28)	SW846 8270C
Benzo(a)pyrene	79	(17 - 163)			SW846 8270C
	91	(17 - 163)	14	(0-27)	SW846 8270C
Benzo(b)fluoranthene	78	(48 - 134)			SW846 8270C
	88	(48 - 134)	11	(0-37)	SW846 8270C
Benzo(ghi)perylene	85	(69 - 115)			SW846 8270C
	96	(69 - 115)	13	(0-31)	SW846 8270C
Benzo(k)fluoranthene	79	(47 - 115)			SW846 8270C
	94	(47 - 115)	17	(0-29)	SW846 8270C
Benzoic acid	73	(14 - 187)			SW846 8270C
	68	(14 - 187)	8.0	(0-50)	SW846 8270C
Benzyl alcohol	96	(69 - 109)			SW846 8270C
	96	(69 - 109)	0.15	(0-27)	SW846 8270C
bis(2-Chloroethoxy) methane	90	(33 - 184)			SW846 8270C
	94	(33 - 184)	4.0	(0-28)	SW846 8270C
bis(2-Chloroethyl)-ether	79	(65 - 106)			SW846 8270C
	82	(65 - 106)	4.2	(0-24)	SW846 8270C
bis(2-Chloroisopropyl) ether	88	(36 - 166)			SW846 8270C
	89	(36 - 166)	0.86	(0-35)	SW846 8270C
bis(2-Ethylhexyl) phthalate	90	(59 - 116)			SW846 8270C
	106	(59 - 116)	16	(0-35)	SW846 8270C
Butyl benzyl phthalate	90	(73 - 125)			SW846 8270C
	104	(73 - 125)	14	(0-23)	SW846 8270C
Carbazole	88	(34 - 132)			SW846 8270C
	97	(34 - 132)	9.1	(0-30)	SW846 8270C
Chrysene	88	(67 - 110)			SW846 8270C
	101	(67 - 110)	14	(0-31)	SW846 8270C
Di-n-butyl phthalate	96	(68 - 117)			SW846 8270C
	101	(68 - 117)	5.4	(0-49)	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTCG81AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G150000-146 FTCG81AD-LCSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Di-n-octyl phthalate	87	(71 - 118)			SW846 8270C
	100	(71 - 118)	14	(0-64)	SW846 8270C
Dibenz(a,h)anthracene	93	(64 - 120)			SW846 8270C
	105	(64 - 120)	13	(0-28)	SW846 8270C
Dibenzofuran	93	(63 - 101)			SW846 8270C
	98	(63 - 101)	5.2	(0-31)	SW846 8270C
Diethyl phthalate	92	(73 - 110)			SW846 8270C
	100	(73 - 110)	8.3	(0-20)	SW846 8270C
Dimethyl phthalate	89	(69 - 104)			SW846 8270C
	97	(69 - 104)	8.3	(0-50)	SW846 8270C
Fluoranthene	85	(67 - 113)			SW846 8270C
	94	(67 - 113)	9.8	(0-30)	SW846 8270C
Fluorene	88	(59 - 121)			SW846 8270C
	93	(59 - 121)	6.2	(0-26)	SW846 8270C
Hexachlorobenzene	96	(64 - 113)			SW846 8270C
	99	(64 - 113)	3.0	(0-27)	SW846 8270C
Hexachlorobutadiene	88	(60 - 109)			SW846 8270C
	88	(60 - 109)	0.57	(0-32)	SW846 8270C
Hexachlorocyclopenta-diene	48	(1.0- 78)			SW846 8270C
	52	(1.0- 78)	9.0	(0-128)	SW846 8270C
Hexachloroethane	86	(59 - 106)			SW846 8270C
	87	(59 - 106)	1.8	(0-35)	SW846 8270C
Indeno(1,2,3-cd)pyrene	85	(66 - 117)			SW846 8270C
	97	(66 - 117)	13	(0-26)	SW846 8270C
Isophorone	121	(21 - 196)			SW846 8270C
	123	(21 - 196)	2.0	(0-28)	SW846 8270C
N-Nitrosodi-n-propyl-amine	90	(52 - 108)			SW846 8270C
	90	(52 - 108)	0.60	(0-20)	SW846 8270C
N-Nitrosodiphenylamine	101	(63 - 128)			SW846 8270C
	112	(63 - 128)	9.8	(0-27)	SW846 8270C
Naphthalene	87	(57 - 99)			SW846 8270C
	90	(57 - 99)	3.5	(0-30)	SW846 8270C
Nitrobenzene	88	(35 - 180)			SW846 8270C
	90	(35 - 180)	1.9	(0-21)	SW846 8270C
Phenanthrene	87	(64 - 109)			SW846 8270C
	91	(64 - 109)	3.7	(0-38)	SW846 8270C
Pyrene	83	(56 - 120)			SW846 8270C
	94	(56 - 120)	13	(0-20)	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTCG81AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G150000-146 FTCG81AD-LCSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
2,4,5-Trichloro-phenol	89	(67 - 108)			SW846 8270C
	98	(67 - 108)	9.4	(0-31)	SW846 8270C
2,4,6-Trichloro-phenol	92	(73 - 125)			SW846 8270C
	96	(73 - 125)	4.8	(0-33)	SW846 8270C
2,4-Dichlorophenol	92	(67 - 107)			SW846 8270C
	95	(67 - 107)	3.2	(0-20)	SW846 8270C
2,4-Dimethylphenol	92	(42 - 101)			SW846 8270C
	94	(42 - 101)	2.2	(0-37)	SW846 8270C
2,4-Dinitrophenol	82	(40 - 186)			SW846 8270C
	91	(40 - 186)	9.9	(0-54)	SW846 8270C
2-Chlorophenol	86	(52 - 107)			SW846 8270C
	93	(52 - 107)	7.4	(0-22)	SW846 8270C
2-Methylphenol	89	(67 - 109)			SW846 8270C
	89	(67 - 109)	0.16	(0-49)	SW846 8270C
2-Nitrophenol	93	(29 - 182)			SW846 8270C
	95	(29 - 182)	1.8	(0-35)	SW846 8270C
4,6-Dinitro-2-methylphenol	86	(67 - 147)			SW846 8270C
	97	(67 - 147)	12	(0-28)	SW846 8270C
4-Chloro-3-methylphenol	93	(22 - 147)			SW846 8270C
	96	(22 - 147)	2.9	(0-20)	SW846 8270C
4-Nitrophenol	93	(42 - 115)			SW846 8270C
	104	(42 - 115)	11	(0-32)	SW846 8270C
Pentachlorophenol	97	(14 - 176)			SW846 8270C
	101	(14 - 176)	4.8	(0-30)	SW846 8270C
Phenol	88	(45 - 105)			SW846 8270C
	93	(45 - 105)	5.9	(0-20)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	99	(49 - 106)
	103	(49 - 106)
2-Fluorobiphenyl	86	(43 - 116)
	89	(43 - 116)
2-Fluorophenol	84	(36 - 108)
	87	(36 - 108)
Nitrobenzene-d5	90	(51 - 104)
	91	(51 - 104)

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 **Work Order #...:** FTCG81AC-LCS **Matrix.....:** WATER
LCS Lot-Sample#: D3G150000-146 FTCG81AD-LCSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Phenol-d5	87	(47 - 106)
	93	(47 - 106)
Terphenyl-d14	89	(33 - 141)
	101	(33 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTCG81AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G150000-146 FTCG81AD-LCSD
Prep Date.....: 07/15/03 Analysis Date..: 07/21/03
Prep Batch #...: 3196146 Analysis Time..: 20:40
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
1,2,4-Trichloro-benzene	100	87.4	ug/L	87		SW846 8270C
	100	89.2	ug/L	89	2.0	SW846 8270C
1,2-Dichlorobenzene	100	87.7	ug/L	88		SW846 8270C
	100	88.3	ug/L	88	0.66	SW846 8270C
1,3-Dichlorobenzene	100	84.7	ug/L	85		SW846 8270C
	100	84.2	ug/L	84	0.52	SW846 8270C
1,4-Dichlorobenzene	100	83.6	ug/L	84		SW846 8270C
	100	85.1	ug/L	85	1.7	SW846 8270C
2,4-Dinitrotoluene	100	92.8	ug/L	93		SW846 8270C
	100	101	ug/L	101	8.8	SW846 8270C
2,6-Dinitrotoluene	100	90.9	ug/L	91		SW846 8270C
	100	97.5	ug/L	97	7.0	SW846 8270C
2-Chloronaphthalene	100	86.8	ug/L	87		SW846 8270C
	100	91.7	ug/L	92	5.5	SW846 8270C
2-Methylnaphthalene	100	90.0	ug/L	90		SW846 8270C
	100	94.5	ug/L	94	4.9	SW846 8270C
2-Nitroaniline	100	86.6	ug/L	87		SW846 8270C
	100	94.9	ug/L	95	9.2	SW846 8270C
3,3'-Dichlorobenzidine	200	138	ug/L	69		SW846 8270C
	200	155	ug/L	78	12	SW846 8270C
3-Nitroaniline	100	70.9 a	ug/L	71		SW846 8270C
	100	73.9	ug/L	74	4.1	SW846 8270C
4-Bromophenyl phenyl ether	100	93.5	ug/L	93		SW846 8270C
	100	97.3	ug/L	97	4.0	SW846 8270C
4-Chloroaniline	100	70.5	ug/L	71		SW846 8270C
	100	66.8	ug/L	67	5.5	SW846 8270C
4-Chlorophenyl phenyl ether	100	90.8	ug/L	91		SW846 8270C
	100	97.3	ug/L	97	6.9	SW846 8270C
4-Methylphenol	100	91.5	ug/L	91		SW846 8270C
	100	91.9	ug/L	92	0.42	SW846 8270C
4-Nitroaniline	100	85.2	ug/L	85		SW846 8270C
	100	96.1	ug/L	96	12	SW846 8270C
Acenaphthylene	100	85.7	ug/L	86		SW846 8270C
	100	90.7	ug/L	91	5.6	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTCG81AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G150000-146 FTCG81AD-LCSD

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Acenaphthene	100	85.0	ug/L	85		SW846 8270C
	100	90.3	ug/L	90	6.0	SW846 8270C
Anthracene	100	89.1	ug/L	89		SW846 8270C
	100	93.5	ug/L	94	4.8	SW846 8270C
Benzo(a)anthracene	100	79.2	ug/L	79		SW846 8270C
	100	89.8	ug/L	90	13	SW846 8270C
Benzo(a)pyrene	100	79.3	ug/L	79		SW846 8270C
	100	90.8	ug/L	91	14	SW846 8270C
Benzo(b)fluoranthene	100	78.1	ug/L	78		SW846 8270C
	100	87.6	ug/L	88	11	SW846 8270C
Benzo(ghi)perylene	100	84.7	ug/L	85		SW846 8270C
	100	96.2	ug/L	96	13	SW846 8270C
Benzo(k)fluoranthene	100	79.2	ug/L	79		SW846 8270C
	100	93.8	ug/L	94	17	SW846 8270C
Benzoic acid	100	73.3	ug/L	73		SW846 8270C
	100	67.7	ug/L	68	8.0	SW846 8270C
Benzyl alcohol	100	95.6	ug/L	96		SW846 8270C
	100	95.7	ug/L	96	0.15	SW846 8270C
bis(2-Chloroethoxy) methane	100	90.1	ug/L	90		SW846 8270C
	100	93.8	ug/L	94	4.0	SW846 8270C
bis(2-Chloroethyl)-ether	100	78.7	ug/L	79		SW846 8270C
	100	82.1	ug/L	82	4.2	SW846 8270C
bis(2-Chloroisopropyl) ether	100	88.4	ug/L	88		SW846 8270C
	100	89.1	ug/L	89	0.86	SW846 8270C
bis(2-Ethylhexyl) phthalate	100	89.8	ug/L	90		SW846 8270C
	100	106	ug/L	106	16	SW846 8270C
Butyl benzyl phthalate	100	89.6	ug/L	90		SW846 8270C
	100	104	ug/L	104	14	SW846 8270C
Carbazole	100	88.1	ug/L	88		SW846 8270C
	100	96.6	ug/L	97	9.1	SW846 8270C
Chrysene	100	88.2	ug/L	88		SW846 8270C
	100	101	ug/L	101	14	SW846 8270C
Di-n-butyl phthalate	100	95.8	ug/L	96		SW846 8270C
	100	101	ug/L	101	5.4	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTCG81AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G150000-146 FTCG81AD-LCSD

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Di-n-octyl phthalate	100	86.9	ug/L	87		SW846 8270C
	100	99.9	ug/L	100	14	SW846 8270C
Dibenz(a,h)anthracene	100	92.6	ug/L	93		SW846 8270C
	100	105	ug/L	105	13	SW846 8270C
Dibenzofuran	100	92.6	ug/L	93		SW846 8270C
	100	97.6	ug/L	98	5.2	SW846 8270C
Diethyl phthalate	100	91.9	ug/L	92		SW846 8270C
	100	99.9	ug/L	100	8.3	SW846 8270C
Dimethyl phthalate	100	89.0	ug/L	89		SW846 8270C
	100	96.7	ug/L	97	8.3	SW846 8270C
Fluoranthene	100	84.9	ug/L	85		SW846 8270C
	100	93.7	ug/L	94	9.8	SW846 8270C
Fluorene	100	87.8	ug/L	88		SW846 8270C
	100	93.5	ug/L	93	6.2	SW846 8270C
Hexachlorobenzene	100	95.7	ug/L	96		SW846 8270C
	100	98.6	ug/L	99	3.0	SW846 8270C
Hexachlorobutadiene	100	88.3	ug/L	88		SW846 8270C
	100	87.8	ug/L	88	0.57	SW846 8270C
Hexachlorocyclopenta-diene	100	47.5	ug/L	48		SW846 8270C
	100	52.0	ug/L	52	9.0	SW846 8270C
Hexachloroethane	100	85.7	ug/L	86		SW846 8270C
	100	87.3	ug/L	87	1.8	SW846 8270C
Indeno(1,2,3-cd)pyrene	100	84.8	ug/L	85		SW846 8270C
	100	97.0	ug/L	97	13	SW846 8270C
Isophorone	100	121	ug/L	121		SW846 8270C
	100	123	ug/L	123	2.0	SW846 8270C
N-Nitrosodi-n-propyl-amine	100	89.9	ug/L	90		SW846 8270C
	100	90.4	ug/L	90	0.60	SW846 8270C
N-Nitrosodiphenylamine	100	101	ug/L	101		SW846 8270C
	100	112	ug/L	112	9.8	SW846 8270C
Naphthalene	100	87.0	ug/L	87		SW846 8270C
	100	90.1	ug/L	90	3.5	SW846 8270C
Nitrobenzene	100	87.9	ug/L	88		SW846 8270C
	100	89.5	ug/L	90	1.9	SW846 8270C
Phenanthrene	100	87.4	ug/L	87		SW846 8270C
	100	90.7	ug/L	91	3.7	SW846 8270C
Pyrene	100	82.6	ug/L	83		SW846 8270C
	100	94.2	ug/L	94	13	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTCG81AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G150000-146 FTCG81AD-LCSD

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
2,4,5-Trichloro-phenol	100	89.4	ug/L	89		SW846 8270C
	100	98.2	ug/L	98	9.4	SW846 8270C
2,4,6-Trichloro-phenol	100	91.7	ug/L	92		SW846 8270C
	100	96.2	ug/L	96	4.8	SW846 8270C
2,4-Dichlorophenol	100	91.5	ug/L	92		SW846 8270C
	100	94.5	ug/L	95	3.2	SW846 8270C
2,4-Dimethylphenol	100	92.1	ug/L	92		SW846 8270C
	100	94.1	ug/L	94	2.2	SW846 8270C
2,4-Dinitrophenol	100	82.0	ug/L	82		SW846 8270C
	100	90.6	ug/L	91	9.9	SW846 8270C
2-Chlorophenol	100	86.3	ug/L	86		SW846 8270C
	100	92.9	ug/L	93	7.4	SW846 8270C
2-Methylphenol	100	89.2	ug/L	89		SW846 8270C
	100	89.4	ug/L	89	0.16	SW846 8270C
2-Nitrophenol	100	93.1	ug/L	93		SW846 8270C
	100	94.7	ug/L	95	1.8	SW846 8270C
4,6-Dinitro-2-methylphenol	100	85.8	ug/L	86		SW846 8270C
	100	97.1	ug/L	97	12	SW846 8270C
4-Chloro-3-methylphenol	100	93.0	ug/L	93		SW846 8270C
	100	95.8	ug/L	96	2.9	SW846 8270C
4-Nitrophenol	100	93.1	ug/L	93		SW846 8270C
	100	104	ug/L	104	11	SW846 8270C
Pentachlorophenol	100	96.6	ug/L	97		SW846 8270C
	100	101	ug/L	101	4.8	SW846 8270C
Phenol	100	87.8	ug/L	88		SW846 8270C
	100	93.1	ug/L	93	5.9	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	99	(49 - 106)
	103	(49 - 106)
2-Fluorobiphenyl	86	(43 - 116)
	89	(43 - 116)
2-Fluorophenol	84	(36 - 108)
	87	(36 - 108)
Nitrobenzene-d5	90	(51 - 104)
	91	(51 - 104)

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTCG81AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G150000-146 FTCG81AD-LCSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Phenol-d5	87	(47 - 106)
	93	(47 - 106)
Terphenyl-d14	89	(33 - 141)
	101	(33 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FR7671AA Matrix.....: WATER
MB Lot-Sample #: D3G140000-253

Prep Date.....: 07/14/03 Analysis Time..: 13:43
Analysis Date..: 07/21/03 Prep Batch #...: 3195253
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Aldrin	ND	0.040	ug/L	SW846 8081A
alpha-BHC	ND	0.030	ug/L	SW846 8081A
beta-BHC	ND	0.060	ug/L	SW846 8081A
delta-BHC	ND	0.090	ug/L	SW846 8081A
gamma-BHC (Lindane)	ND	0.040	ug/L	SW846 8081A
Chlordane (technical)	ND	0.14	ug/L	SW846 8081A
alpha-Chlordane	ND	0.050	ug/L	SW846 8081A
gamma-Chlordane	ND	0.050	ug/L	SW846 8081A
4,4'-DDD	ND	0.11	ug/L	SW846 8081A
4,4'-DDE	ND	0.040	ug/L	SW846 8081A
4,4'-DDT	ND	0.12	ug/L	SW846 8081A
Dieldrin	ND	0.020	ug/L	SW846 8081A
Endosulfan I	ND	0.020	ug/L	SW846 8081A
Endosulfan II	ND	0.040	ug/L	SW846 8081A
Endosulfan sulfate	ND	0.66	ug/L	SW846 8081A
Endrin	ND	0.060	ug/L	SW846 8081A
Endrin aldehyde	ND	0.23	ug/L	SW846 8081A
Endrin ketone	ND	0.10	ug/L	SW846 8081A
Heptachlor	ND	0.030	ug/L	SW846 8081A
Heptachlor epoxide	ND	0.080	ug/L	SW846 8081A
Methoxychlor	ND	1.8	ug/L	SW846 8081A
Toxaphene	ND	2.5	ug/L	SW846 8081A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	101	(71 - 127)
Tetrachloro-m-xylene	58 *	(61 - 115)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

* Surrogate recovery is outside stated control limits.

Undetected, analyzed for, but not detected

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FR7671AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G140000-253 FR7671AD-LCSD
Prep Date.....: 07/14/03 Analysis Date..: 07/21/03
Prep Batch #...: 3195253 Analysis Time..: 12:59
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Aldrin	77	(48 - 118)			SW846 8081A
	78	(48 - 118)	1.1	(0-30)	SW846 8081A
beta-BHC	100	(66 - 124)			SW846 8081A
	102	(66 - 124)	1.7	(0-30)	SW846 8081A
delta-BHC	89	(44 - 119)			SW846 8081A
	88	(44 - 119)	1.1	(0-30)	SW846 8081A
Dieldrin	96	(68 - 122)			SW846 8081A
	98	(68 - 122)	2.9	(0-30)	SW846 8081A
Endosulfan I	97	(70 - 121)			SW846 8081A
	99	(70 - 121)	2.0	(0-30)	SW846 8081A
Endosulfan II	93	(71 - 124)			SW846 8081A
	97	(71 - 124)	4.1	(0-30)	SW846 8081A
Endosulfan sulfate	100	(64 - 131)			SW846 8081A
	104	(64 - 131)	3.8	(0-30)	SW846 8081A
Endrin	94	(71 - 122)			SW846 8081A
	97	(71 - 122)	3.2	(0-30)	SW846 8081A
Endrin aldehyde	88	(60 - 122)			SW846 8081A
	93	(60 - 122)	5.3	(0-30)	SW846 8081A
Endrin ketone	101	(40 - 130)			SW846 8081A
	106	(40 - 130)	4.6	(0-30)	SW846 8081A
gamma-BHC (Lindane)	95	(68 - 120)			SW846 8081A
	97	(68 - 120)	2.6	(0-30)	SW846 8081A
Heptachlor	85	(48 - 131)			SW846 8081A
	86	(48 - 131)	2.1	(0-30)	SW846 8081A
Heptachlor epoxide	102	(66 - 121)			SW846 8081A
	105	(66 - 121)	2.8	(0-30)	SW846 8081A
Methoxychlor	103	(46 - 151)			SW846 8081A
	106	(46 - 151)	2.7	(0-30)	SW846 8081A
alpha-Chlordane	93	(67 - 126)			SW846 8081A
	96	(67 - 126)	3.0	(0-30)	SW846 8081A
gamma-Chlordane	94	(65 - 126)			SW846 8081A
	96	(65 - 126)	2.2	(0-30)	SW846 8081A
4,4'-DDD	103	(61 - 129)			SW846 8081A
	107	(61 - 129)	4.0	(0-30)	SW846 8081A
4,4'-DDE	97	(61 - 130)			SW846 8081A
	102	(61 - 130)	4.8	(0-30)	SW846 8081A
4,4'-DDT	107	(51 - 139)			SW846 8081A
	111	(51 - 139)	4.0	(0-30)	SW846 8081A
alpha-BHC	93	(65 - 118)			SW846 8081A
	96	(65 - 118)	2.8	(0-30)	SW846 8081A

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: D3G100364 **Work Order #...:** FR7671AC-LCS **Matrix.....:** WATER
LCS Lot-Sample#: D3G140000-253 FR7671AD-LCSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	95	(71 - 127)
	97	(71 - 127)
Tetrachloro-m-xylene	65	(61 - 115)
	67	(61 - 115)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FR7671AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G140000-253 FR7671AD-LCSD
Prep Date.....: 07/14/03 Analysis Date..: 07/21/03
Prep Batch #...: 3195253 Analysis Time..: 12:59
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Aldrin	0.500	0.384	ug/L	77		SW846 8081A
	0.500	0.388	ug/L	78	1.1	SW846 8081A
beta-BHC	0.500	0.502	ug/L	100		SW846 8081A
	0.500	0.511	ug/L	102	1.7	SW846 8081A
delta-BHC	0.500	0.443	ug/L	89		SW846 8081A
	0.500	0.438	ug/L	88	1.1	SW846 8081A
Dieldrin	0.500	0.478	ug/L	96		SW846 8081A
	0.500	0.492	ug/L	98	2.9	SW846 8081A
Endosulfan I	0.500	0.484	ug/L	97		SW846 8081A
	0.500	0.493	ug/L	99	2.0	SW846 8081A
Endosulfan II	0.500	0.466	ug/L	93		SW846 8081A
	0.500	0.485	ug/L	97	4.1	SW846 8081A
Endosulfan sulfate	0.500	0.499	ug/L	100		SW846 8081A
	0.500	0.519	ug/L	104	3.8	SW846 8081A
Endrin	0.500	0.469	ug/L	94		SW846 8081A
	0.500	0.485	ug/L	97	3.2	SW846 8081A
Endrin aldehyde	0.500	0.442	ug/L	88		SW846 8081A
	0.500	0.466	ug/L	93	5.3	SW846 8081A
Endrin ketone	0.500	0.504	ug/L	101		SW846 8081A
	0.500	0.528	ug/L	106	4.6	SW846 8081A
gamma-BHC (Lindane)	0.500	0.474	ug/L	95		SW846 8081A
	0.500	0.486	ug/L	97	2.6	SW846 8081A
Heptachlor	0.500	0.423	ug/L	85		SW846 8081A
	0.500	0.432	ug/L	86	2.1	SW846 8081A
Heptachlor epoxide	0.500	0.510	ug/L	102		SW846 8081A
	0.500	0.525	ug/L	105	2.8	SW846 8081A
Methoxychlor	0.500	0.515	ug/L	103		SW846 8081A
	0.500	0.529	ug/L	106	2.7	SW846 8081A
alpha-Chlordane	0.500	0.466	ug/L	93		SW846 8081A
	0.500	0.481	ug/L	96	3.0	SW846 8081A
gamma-Chlordane	0.500	0.471	ug/L	94		SW846 8081A
	0.500	0.481	ug/L	96	2.2	SW846 8081A
4,4'-DDD	0.500	0.515	ug/L	103		SW846 8081A
	0.500	0.535	ug/L	107	4.0	SW846 8081A
4,4'-DDE	0.500	0.485	ug/L	97		SW846 8081A
	0.500	0.509	ug/L	102	4.8	SW846 8081A
4,4'-DDT	0.500	0.534	ug/L	107		SW846 8081A
	0.500	0.556	ug/L	111	4.0	SW846 8081A
alpha-BHC	0.500	0.467	ug/L	93		SW846 8081A
	0.500	0.480	ug/L	96	2.8	SW846 8081A

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FR7671AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G140000-253 FR7671AD-LCSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	95	(71 - 127)
	97	(71 - 127)
Tetrachloro-m-xylene	65	(61 - 115)
	67	(61 - 115)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTEG01AA Matrix.....: SOLID
MB Lot-Sample #: D3G160000-376

Prep Date.....: 07/16/03 Analysis Time..: 20:23
Analysis Date..: 07/23/03 Prep Batch #...: 3197376
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Aldrin	ND	27	ug/kg	SW846 8081A
alpha-BHC	ND	20	ug/kg	SW846 8081A
beta-BHC	ND	40	ug/kg	SW846 8081A
delta-BHC	ND	60	ug/kg	SW846 8081A
gamma-BHC (Lindane)	ND	27	ug/kg	SW846 8081A
Chlordane (technical)	ND	95	ug/kg	SW846 8081A
alpha-Chlordane	ND	1.7	ug/kg	SW846 8081A
gamma-Chlordane	ND	1.7	ug/kg	SW846 8081A
4,4'-DDD	ND	75	ug/kg	SW846 8081A
4,4'-DDE	ND	27	ug/kg	SW846 8081A
4,4'-DDT	ND	80	ug/kg	SW846 8081A
Dieldrin	ND	14	ug/kg	SW846 8081A
Endosulfan I	ND	14	ug/kg	SW846 8081A
Endosulfan II	ND	27	ug/kg	SW846 8081A
Endosulfan sulfate	ND	450	ug/kg	SW846 8081A
Endrin	ND	40	ug/kg	SW846 8081A
Endrin aldehyde	ND	160	ug/kg	SW846 8081A
Endrin ketone	ND	3.3	ug/kg	SW846 8081A
Heptachlor	ND	20	ug/kg	SW846 8081A
Heptachlor epoxide	ND	54	ug/kg	SW846 8081A
Methoxychlor	ND	1200	ug/kg	SW846 8081A
Toxaphene	ND	1700	ug/kg	SW846 8081A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	87	(62 - 125)
Tetrachloro-m-xylene	98	(52 - 131)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Undetected, analyzed for, but not detected

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTEG01AC-LCS Matrix.....: SOLID
LCS Lot-Sample#: D3G160000-376 FTEG01AD-LCSD
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197376 Analysis Time..: 18:13
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
4,4'-DDD	99	(63 - 116)			SW846 8081A
	96	(63 - 116)	2.7	(0-50)	SW846 8081A
4,4'-DDE	96	(64 - 115)			SW846 8081A
	94	(64 - 115)	1.6	(0-50)	SW846 8081A
4,4'-DDT	91	(74 - 111)			SW846 8081A
	91	(74 - 111)	0.090	(0-50)	SW846 8081A
Aldrin	84	(62 - 105)			SW846 8081A
	85	(62 - 105)	0.88	(0-50)	SW846 8081A
alpha-BHC	80	(61 - 109)			SW846 8081A
	78	(61 - 109)	2.3	(0-50)	SW846 8081A
beta-BHC	86	(57 - 118)			SW846 8081A
	86	(57 - 118)	0.26	(0-50)	SW846 8081A
delta-BHC	94	(42 - 113)			SW846 8081A
	92	(42 - 113)	2.2	(0-50)	SW846 8081A
Dieldrin	91	(69 - 108)			SW846 8081A
	90	(69 - 108)	1.6	(0-50)	SW846 8081A
Endosulfan I	84	(65 - 115)			SW846 8081A
	84	(65 - 115)	0.32	(0-50)	SW846 8081A
Endosulfan II	98	(64 - 119)			SW846 8081A
	93	(64 - 119)	4.3	(0-50)	SW846 8081A
Endosulfan sulfate	99	(63 - 113)			SW846 8081A
	96	(63 - 113)	3.4	(0-50)	SW846 8081A
Endrin	87	(68 - 117)			SW846 8081A
	89	(68 - 117)	2.3	(0-50)	SW846 8081A
Endrin aldehyde	64	(36 - 96)			SW846 8081A
	64	(36 - 96)	0.27	(0-50)	SW846 8081A
Endrin ketone	96	(40 - 140)			SW846 8081A
	95	(40 - 140)	1.0	(0-50)	SW846 8081A
gamma-BHC (Lindane)	89	(56 - 109)			SW846 8081A
	89	(56 - 109)	0.50	(0-50)	SW846 8081A
Heptachlor	94	(65 - 112)			SW846 8081A
	94	(65 - 112)	0.36	(0-50)	SW846 8081A
Heptachlor epoxide	97	(66 - 111)			SW846 8081A
	95	(66 - 111)	1.8	(0-50)	SW846 8081A
Methoxychlor	100	(59 - 120)			SW846 8081A
	98	(59 - 120)	1.7	(0-50)	SW846 8081A
alpha-Chlordane	89	(65 - 126)			SW846 8081A
	88	(65 - 126)	1.4	(0-30)	SW846 8081A
gamma-Chlordane	89	(65 - 115)			SW846 8081A
	87	(65 - 115)	2.4	(0-50)	SW846 8081A

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTEG01AC-LCS Matrix.....: SOLID
LCS Lot-Sample#: D3G160000-376 FTEG01AD-LCSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	114	(62 - 125)
	108	(62 - 125)
Tetrachloro-m-xylene	95	(52 - 131)
	93	(52 - 131)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTEG01AC-LCS Matrix.....: SOLID
LCS Lot-Sample#: D3G160000-376 FTEG01AD-LCSD
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197376 Analysis Time..: 18:13
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
4,4'-DDD	16.7	16.4	ug/kg	99		SW846 8081A
	16.7	16.0	ug/kg	96	2.7	SW846 8081A
4,4'-DDE	16.7	16.0	ug/kg	96		SW846 8081A
	16.7	15.7	ug/kg	94	1.6	SW846 8081A
4,4'-DDT	16.7	15.2	ug/kg	91		SW846 8081A
	16.7	15.2	ug/kg	91	0.090	SW846 8081A
Aldrin	16.7	14.0	ug/kg	84		SW846 8081A
	16.7	14.1	ug/kg	85	0.88	SW846 8081A
alpha-BHC	16.7	13.3	ug/kg	80		SW846 8081A
	16.7	13.0	ug/kg	78	2.3	SW846 8081A
beta-BHC	16.7	14.3	ug/kg	86		SW846 8081A
	16.7	14.3	ug/kg	86	0.26	SW846 8081A
delta-BHC	16.7	15.7	ug/kg	94		SW846 8081A
	16.7	15.3	ug/kg	92	2.2	SW846 8081A
Dieldrin	16.7	15.2	ug/kg	91		SW846 8081A
	16.7	15.0	ug/kg	90	1.6	SW846 8081A
Endosulfan I	16.7	14.0	ug/kg	84		SW846 8081A
	16.7	14.0	ug/kg	84	0.32	SW846 8081A
Endosulfan II	16.7	16.3	ug/kg	98		SW846 8081A
	16.7	15.6	ug/kg	93	4.3	SW846 8081A
Endosulfan sulfate	16.7	16.6	ug/kg	99		SW846 8081A
	16.7	16.0	ug/kg	96	3.4	SW846 8081A
Endrin	16.7	14.5	ug/kg	87		SW846 8081A
	16.7	14.8	ug/kg	89	2.3	SW846 8081A
Endrin aldehyde	16.7	10.7	ug/kg	64		SW846 8081A
	16.7	10.7	ug/kg	64	0.27	SW846 8081A
Endrin ketone	16.7	16.0	ug/kg	96		SW846 8081A
	16.7	15.8	ug/kg	95	1.0	SW846 8081A
gamma-BHC (Lindane)	16.7	14.9	ug/kg	89		SW846 8081A
	16.7	14.8	ug/kg	89	0.50	SW846 8081A
Heptachlor	16.7	15.6	ug/kg	94		SW846 8081A
	16.7	15.7	ug/kg	94	0.36	SW846 8081A
Heptachlor epoxide	16.7	16.1	ug/kg	97		SW846 8081A
	16.7	15.9	ug/kg	95	1.8	SW846 8081A
Methoxychlor	16.7	16.6	ug/kg	100		SW846 8081A
	16.7	16.4	ug/kg	98	1.7	SW846 8081A
alpha-Chlordane	16.7	14.9	ug/kg	89		SW846 8081A
	16.7	14.7	ug/kg	88	1.4	SW846 8081A
gamma-Chlordane	16.7	14.8	ug/kg	89		SW846 8081A
	16.7	14.5	ug/kg	87	2.4	SW846 8081A

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: D3G100364 **Work Order #...:** FTEG01AC-LCS **Matrix.....:** SOLID
LCS Lot-Sample#: D3G160000-376 FTEG01AD-LCSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	114	(62 - 125)
	108	(62 - 125)
Tetrachloro-m-xylene	95	(52 - 131)
	93	(52 - 131)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC Semivolatiles

Lot-Sample #...: D3G100364 Work Order #...: FR3VC1AG Matrix.....: SO
MS Lot-Sample #: D3G100364-002
Date Sampled...: 07/08/03 11:40 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197376
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
4,4'-DDD	86	(63 - 116)	SW846 8081A
4,4'-DDE	84	(64 - 115)	SW846 8081A
4,4'-DDT	98	(74 - 111)	SW846 8081A
Aldrin	79	(62 - 105)	SW846 8081A
alpha-BHC	74	(61 - 109)	SW846 8081A
beta-BHC	88	(57 - 118)	SW846 8081A
delta-BHC	87	(42 - 113)	SW846 8081A
Dieldrin	80	(69 - 108)	SW846 8081A
Endosulfan I	74	(65 - 115)	SW846 8081A
Endosulfan II	77	(64 - 119)	SW846 8081A
Endosulfan sulfate	71	(63 - 113)	SW846 8081A
Endrin	91	(68 - 117)	SW846 8081A
Endrin aldehyde	56	(36 - 96)	SW846 8081A
Endrin ketone	88	(40 - 140)	SW846 8081A
gamma-BHC (Lindane)	84	(56 - 109)	SW846 8081A
Heptachlor	88	(65 - 112)	SW846 8081A
Heptachlor epoxide	90	(66 - 111)	SW846 8081A
Methoxychlor	103	(59 - 120)	SW846 8081A
alpha-Chlordane	80	(65 - 126)	SW846 8081A
gamma-Chlordane	75	(65 - 115)	SW846 8081A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	98	(62 - 125)
Tetrachloro-m-xylene	89	(52 - 131)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight

MATRIX SPIKE SAMPLE DATA REPORT

GC Semivolatiles

Lot-Sample #...: D3G100364 Work Order #...: FR3VC1AG Matrix.....: SO
MS Lot-Sample #: D3G100364-002
Date Sampled...: 07/08/03 11:40 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197376
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECOVERY	METHOD
4,4'-DDD	ND	17.5	15.0	ug/kg	86	SW846 8081A
4,4'-DDE	2.0	17.5	16.7	ug/kg	84	SW846 8081A
4,4'-DDT	8.4	17.5	25.6	ug/kg	98	SW846 8081A
Aldrin	ND	17.5	13.8	ug/kg	79	SW846 8081A
alpha-BHC	ND	17.5	13.0	ug/kg	74	SW846 8081A
beta-BHC	ND	17.5	15.5	ug/kg	88	SW846 8081A
delta-BHC	ND	17.5	15.3	ug/kg	87	SW846 8081A
Dieldrin	ND	17.5	14.0	ug/kg	80	SW846 8081A
Endosulfan I	ND	17.5	12.9	ug/kg	74	SW846 8081A
Endosulfan II	ND	17.5	13.5	ug/kg	77	SW846 8081A
Endosulfan sulfate	ND	17.5	12.4	ug/kg	71	SW846 8081A
Endrin	ND	17.5	15.9	ug/kg	91	SW846 8081A
Endrin aldehyde	ND	17.5	9.77	ug/kg	56	SW846 8081A
Endrin ketone	ND	17.5	15.5	ug/kg	88	SW846 8081A
gamma-BHC (Lindane)	ND	17.5	14.8	ug/kg	84	SW846 8081A
Heptachlor	ND	17.5	15.4	ug/kg	88	SW846 8081A
Heptachlor epoxide	ND	17.5	15.8	ug/kg	90	SW846 8081A
Methoxychlor	ND	17.5	18.1	ug/kg	103	SW846 8081A
alpha-Chlordane	ND	17.5	14.0	ug/kg	80	SW846 8081A
gamma-Chlordane	ND	17.5	13.1	ug/kg	75	SW846 8081A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	98	(62 - 125)
Tetrachloro-m-xylene	89	(52 - 131)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTEGH1AA Matrix.....: SOLID
MB Lot-Sample #: D3G160000-380

Prep Date.....: 07/16/03 Analysis Time..: 03:39
Analysis Date..: 07/23/03 Prep Batch #...: 3197380
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Famphur	ND	13	ug/kg	SW846 8141A
Azinphos-methyl	ND	13	ug/kg	SW846 8141A
Chlorpyrifos	ND	13	ug/kg	SW846 8141A
Coumaphos	ND	13	ug/kg	SW846 8141A
Demeton (total)	ND	13	ug/kg	SW846 8141A
Diazinon	ND	13	ug/kg	SW846 8141A
Dichlorvos	ND	13	ug/kg	SW846 8141A
Thionazin	ND	13	ug/kg	SW846 8141A
Dimethoate	ND	13	ug/kg	SW846 8141A
Disulfoton	ND	13	ug/kg	SW846 8141A
Ethoprop	ND	13	ug/kg	SW846 8141A
Fensulfothion	ND	13	ug/kg	SW846 8141A
Fenthion	ND	13	ug/kg	SW846 8141A
Malathion	ND	13	ug/kg	SW846 8141A
Methyl parathion	ND	13	ug/kg	SW846 8141A
Mevinphos	ND	13	ug/kg	SW846 8141A
Ethyl parathion	ND	13	ug/kg	SW846 8141A
Phorate	ND	13	ug/kg	SW846 8141A
Ronnel	ND	13	ug/kg	SW846 8141A
Tetrachlorvinphos	ND	13	ug/kg	SW846 8141A
Sulfotepp	ND	13	ug/kg	SW846 8141A
Trichloronate	ND	13	ug/kg	SW846 8141A
Simazine	ND	67	ug/kg	SW846 8141A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chlormefos	87	(60 - 113)
Ethyl Pirimifos	85	(36 - 119)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Undetected, analyzed for, but not detected

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTEGH1AC-LCS Matrix.....: SOLID
LCS Lot-Sample#: D3G160000-380 FTEGH1AD-LCSD
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197380 Analysis Time..: 04:12
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Demeton (total)	80	(10 - 123)			SW846 8141A
	60	(10 - 123)	30	(0-40)	SW846 8141A
Diazinon	92	(66 - 134)			SW846 8141A
	98	(66 - 134)	6.7	(0-40)	SW846 8141A
Malathion	100	(69 - 138)			SW846 8141A
	110	(69 - 138)	9.9	(0-40)	SW846 8141A
Methyl parathion	82	(70 - 130)			SW846 8141A
	89	(70 - 130)	8.1	(0-40)	SW846 8141A
Ethyl parathion	85	(36 - 147)			SW846 8141A
	91	(36 - 147)	7.2	(0-40)	SW846 8141A
Phorate	83	(61 - 104)			SW846 8141A
	84	(61 - 104)	1.9	(0-40)	SW846 8141A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chlormefos	87	(60 - 113)
	92	(60 - 113)
Ethyl Pirimifos	83	(36 - 119)
	91	(36 - 119)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FTEGH1AC-LCS Matrix.....: SOLID
LCS Lot-Sample#: D3G160000-380 FTEGH1AD-LCSD
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197380 Analysis Time..: 04:12
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Demeton (total)	333	268	ug/kg	80		SW846 8141A
	333	198	ug/kg	60	30	SW846 8141A
Diazinon	167	153	ug/kg	92		SW846 8141A
	167	164	ug/kg	98	6.7	SW846 8141A
Malathion	167	167	ug/kg	100		SW846 8141A
	167	184	ug/kg	110	9.9	SW846 8141A
Methyl parathion	167	137	ug/kg	82		SW846 8141A
	167	148	ug/kg	89	8.1	SW846 8141A
Ethyl parathion	167	141	ug/kg	85		SW846 8141A
	167	152	ug/kg	91	7.2	SW846 8141A
Phorate	167	138	ug/kg	83		SW846 8141A
	167	141	ug/kg	84	1.9	SW846 8141A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chlormefos	87	(60 - 113)
	92	(60 - 113)
Ethyl Pirimifos	83	(36 - 119)
	91	(36 - 119)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FR3Q71AG-MS Matrix.....: SO
MS Lot-Sample #: D3G100364-001 FR3Q71AH-MSD
Date Sampled...: 07/08/03 10:50 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197380 Analysis Time..: 05:51
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Demeton (total)	64	(10 - 123)			SW846 8141A
	69	(10 - 123)	8.2	(0-40)	SW846 8141A
Diazinon	80	(66 - 134)			SW846 8141A
	89	(66 - 134)	12	(0-40)	SW846 8141A
Malathion	89	(69 - 138)			SW846 8141A
	100	(69 - 138)	12	(0-40)	SW846 8141A
Methyl parathion	75	(70 - 130)			SW846 8141A
	83	(70 - 130)	10	(0-40)	SW846 8141A
Ethyl parathion	76	(36 - 147)			SW846 8141A
	86	(36 - 147)	13	(0-40)	SW846 8141A
Phorate	72	(61 - 104)			SW846 8141A
	78	(61 - 104)	8.2	(0-40)	SW846 8141A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chlormefos	74	(60 - 113)
	80	(60 - 113)
Ethyl Pirimifos	73	(36 - 119)
	82	(36 - 119)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.

MATRIX SPIKE SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FR3Q71AG-MS Matrix.....: SO
MS Lot-Sample #: D3G100364-001 FR3Q71AH-MSD
Date Sampled...: 07/08/03 10:50 Date Received..: 07/10/03
Prep Date.....: 07/16/03 Analysis Date..: 07/23/03
Prep Batch #...: 3197380 Analysis Time..: 05:51
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Demeton (total)	ND	363	232	ug/kg	64		SW846 8141A
	ND	364	252	ug/kg	69	8.2	SW846 8141A
Diazinon	ND	182	145	ug/kg	80		SW846 8141A
	ND	182	163	ug/kg	89	12	SW846 8141A
Malathion	ND	182	162	ug/kg	89		SW846 8141A
	ND	182	182	ug/kg	100	12	SW846 8141A
Methyl parathion	ND	182	136	ug/kg	75		SW846 8141A
	ND	182	151	ug/kg	83	10	SW846 8141A
Ethyl parathion	ND	182	138	ug/kg	76		SW846 8141A
	ND	182	157	ug/kg	86	13	SW846 8141A
Phorate	ND	182	130	ug/kg	72		SW846 8141A
	ND	182	141	ug/kg	78	8.2	SW846 8141A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chlormefos	74	(60 - 113)
	80	(60 - 113)
Ethyl Pirimifos	73	(36 - 119)
	82	(36 - 119)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FR9361AA Matrix.....: WATER
MB Lot-Sample #: D3G150000-150

Prep Date.....: 07/15/03 Analysis Time..: 21:35
Analysis Date..: 07/22/03 Prep Batch #...: 3196150
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Famphur	ND	1.0	ug/L	SW846 8141A
Azinphos-methyl	ND	2.5	ug/L	SW846 8141A
Chlorpyrifos	ND	0.50	ug/L	SW846 8141A
Coumaphos	ND	0.50	ug/L	SW846 8141A
Demeton (total)	ND	1.0	ug/L	SW846 8141A
Diazinon	ND	0.50	ug/L	SW846 8141A
Dichlorvos	ND	0.50	ug/L	SW846 8141A
Thionazin	ND	0.50	ug/L	SW846 8141A
Dimethoate	ND	0.50	ug/L	SW846 8141A
Disulfoton	ND	0.50	ug/L	SW846 8141A
Ethoprop	ND	0.50	ug/L	SW846 8141A
Fensulfothion	ND	2.5	ug/L	SW846 8141A
Fenthion	ND	0.50	ug/L	SW846 8141A
Malathion	ND	1.2	ug/L	SW846 8141A
Methyl parathion	ND	0.50	ug/L	SW846 8141A
Mevinphos	ND	6.2	ug/L	SW846 8141A
Ethyl parathion	ND	0.50	ug/L	SW846 8141A
Phorate	ND	0.50	ug/L	SW846 8141A
Ronnel	ND	10	ug/L	SW846 8141A
Tetrachlorvinphos	ND	2.5	ug/L	SW846 8141A
Sulfotepp	ND	0.50	ug/L	SW846 8141A
Trichloronate	ND	0.50	ug/L	SW846 8141A
Simazine	ND	10	ug/L	SW846 8141A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chlormefos	82	(61 - 102)
Ethyl Pirimifos	65	(10 - 126)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Undetected, analyzed for, but not detected

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FR9361AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G150000-150 FR9361AD-LCSD
Prep Date.....: 07/15/03 Analysis Date..: 07/22/03
Prep Batch #...: 3196150 Analysis Time..: 22:09
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Famphur	83	(36 - 96)			SW846 8141A
	77	(36 - 96)	7.5	(0-40)	SW846 8141A
Azinphos-methyl	81	(31 - 91)			SW846 8141A
	76	(31 - 91)	6.3	(0-40)	SW846 8141A
Chlorpyrifos	82	(56 - 116)			SW846 8141A
	78	(56 - 116)	4.7	(0-40)	SW846 8141A
Coumaphos	84	(56 - 116)			SW846 8141A
	80	(56 - 116)	4.2	(0-40)	SW846 8141A
Demeton (total)	83	(39 - 124)			SW846 8141A
	77	(39 - 124)	7.6	(0-40)	SW846 8141A
Diazinon	89	(77 - 129)			SW846 8141A
	83	(77 - 129)	6.5	(0-40)	SW846 8141A
Dichlorvos	74	(42 - 102)			SW846 8141A
	74	(42 - 102)	0.60	(0-40)	SW846 8141A
Thionazin	83	(48 - 108)			SW846 8141A
	80	(48 - 108)	3.9	(0-40)	SW846 8141A
Dimethoate	48	(13 - 73)			SW846 8141A
	39	(13 - 73)	21	(0-40)	SW846 8141A
Disulfoton	85	(47 - 107)			SW846 8141A
	81	(47 - 107)	5.7	(0-40)	SW846 8141A
Ethoprop	87	(47 - 107)			SW846 8141A
	85	(47 - 107)	2.6	(0-40)	SW846 8141A
Fensulfothion	42	(15 - 75)			SW846 8141A
	30	(15 - 75)	34	(0-40)	SW846 8141A
Fenthion	85	(49 - 109)			SW846 8141A
	83	(49 - 109)	3.2	(0-40)	SW846 8141A
Malathion	83	(16 - 137)			SW846 8141A
	82	(16 - 137)	1.0	(0-40)	SW846 8141A
Methyl parathion	79	(64 - 113)			SW846 8141A
	77	(64 - 113)	2.2	(0-40)	SW846 8141A
Mevinphos	57	(17 - 77)			SW846 8141A
	50	(17 - 77)	13	(0-40)	SW846 8141A
Ethyl parathion	82	(69 - 137)			SW846 8141A
	80	(69 - 137)	2.2	(0-40)	SW846 8141A
Phorate	83	(64 - 115)			SW846 8141A
	82	(64 - 115)	2.1	(0-40)	SW846 8141A
Ronnel	67	(33 - 93)			SW846 8141A
	65	(33 - 93)	2.9	(0-40)	SW846 8141A
Tetrachlorvinphos	77	(39 - 99)			SW846 8141A
	75	(39 - 99)	1.9	(0-40)	SW846 8141A

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FR9361AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G150000-150 FR9361AD-LCSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Sulfotepp	85	(43 - 103)			SW846 8141A
	82	(43 - 103)	3.4	(0-40)	SW846 8141A
Trichloronate	79	(57 - 117)			SW846 8141A
	78	(57 - 117)	1.5	(0-40)	SW846 8141A
Simazine	173 a	(10 - 68)			SW846 8141A
	164 a	(10 - 68)	5.2	(0-40)	SW846 8141A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chlormefos	85	(61 - 102)
	77	(61 - 102)
Ethyl Pirimifos	79	(10 - 126)
	76	(10 - 126)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FR9361AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G150000-150 FR9361AD-LCSD
Prep Date.....: 07/15/03 Analysis Date..: 07/22/03
Prep Batch #...: 3196150 Analysis Time..: 22:09
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Famphur	2.00	1.67	ug/L	83		SW846 8141A
	2.00	1.55	ug/L	77	7.5	SW846 8141A
Azinphos-methyl	2.00	1.62	ug/L	81		SW846 8141A
	2.00	1.52	ug/L	76	6.3	SW846 8141A
Chlorpyrifos	2.00	1.63	ug/L	82		SW846 8141A
	2.00	1.56	ug/L	78	4.7	SW846 8141A
Coumaphos	2.00	1.68	ug/L	84		SW846 8141A
	2.00	1.61	ug/L	80	4.2	SW846 8141A
Demeton (total)	2.00	1.66	ug/L	83		SW846 8141A
	2.00	1.54	ug/L	77	7.6	SW846 8141A
Diazinon	2.00	1.78	ug/L	89		SW846 8141A
	2.00	1.66	ug/L	83	6.5	SW846 8141A
Dichlorvos	2.00	1.49	ug/L	74		SW846 8141A
	2.00	1.48	ug/L	74	0.60	SW846 8141A
Thionazin	2.00	1.65	ug/L	83		SW846 8141A
	2.00	1.59	ug/L	80	3.9	SW846 8141A
Dimethoate	2.00	0.962	ug/L	48		SW846 8141A
	2.00	0.776	ug/L	39	21	SW846 8141A
Disulfoton	2.00	1.71	ug/L	85		SW846 8141A
	2.00	1.61	ug/L	81	5.7	SW846 8141A
Ethoprop	2.00	1.74	ug/L	87		SW846 8141A
	2.00	1.69	ug/L	85	2.6	SW846 8141A
Fensulfothion	2.00	0.846	ug/L	42		SW846 8141A
	2.00	0.602	ug/L	30	34	SW846 8141A
Fenthion	2.00	1.71	ug/L	85		SW846 8141A
	2.00	1.66	ug/L	83	3.2	SW846 8141A
Malathion	2.00	1.66	ug/L	83		SW846 8141A
	2.00	1.64	ug/L	82	1.0	SW846 8141A
Methyl parathion	2.00	1.58	ug/L	79		SW846 8141A
	2.00	1.54	ug/L	77	2.2	SW846 8141A
Mevinphos	2.00	1.15	ug/L	57		SW846 8141A
	2.00	1.01	ug/L	50	13	SW846 8141A
Ethyl parathion	2.00	1.63	ug/L	82		SW846 8141A
	2.00	1.60	ug/L	80	2.2	SW846 8141A
Phorate	2.00	1.66	ug/L	83		SW846 8141A
	2.00	1.63	ug/L	82	2.1	SW846 8141A
Ronnel	2.00	1.34	ug/L	67		SW846 8141A
	2.00	1.30	ug/L	65	2.9	SW846 8141A
Tetrachlorvinphos	2.00	1.54	ug/L	77		SW846 8141A
	2.00	1.51	ug/L	75	1.9	SW846 8141A

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: D3G100364 Work Order #...: FR9361AC-LCS Matrix.....: WATER
LCS Lot-Sample#: D3G150000-150 FR9361AD-LCSD

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Sulfotepp	**2.00**	**1.70**	**ug/L**	**85**		**SW846 8141A**
	2.00	**1.64**	**ug/L**	**82**	**3.4**	**SW846 8141A**
Trichloronate	**2.00**	**1.58**	**ug/L**	**79**		**SW846 8141A**
	2.00	**1.56**	**ug/L**	**78**	**1.5**	**SW846 8141A**
Simazine	**2.00**	**3.45 a**	**ug/L**	**173**		**SW846 8141A**
	2.00	**3.28 a**	**ug/L**	**164**	**5.2**	**SW846 8141A**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chlormefos	85	(61 - 102)
	77	(61 - 102)
Ethyl Pirimifos	79	(10 - 126)
	76	(10 - 126)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

METHOD BLANK REPORT

HPLC

Client Lot #...: D3G100364 Work Order #...: FTA2V1AA Matrix.....: WATER
MB Lot-Sample #: R3G140000-283

Prep Date.....: 07/14/03 Analysis Time..: 13:06
Analysis Date..: 07/15/03 Prep Batch #...: 3195283
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
2,4-D	ND	5.0	ug/L	SW846 8321A
Dalapon	ND	5.0	ug/L	SW846 8321A
2,4-DB	ND	5.0	ug/L	SW846 8321A
Dicamba	ND	5.0	ug/L	SW846 8321A
Dichlorprop	ND	5.0	ug/L	SW846 8321A
Dinoseb	ND	5.0	ug/L	SW846 8321A
MCPA	ND	5.0	ug/L	SW846 8321A
MCPP	ND	5.0	ug/L	SW846 8321A
2,4,5-TP (Silvex)	ND	5.0	ug/L	SW846 8321A
2,4,5-T	ND	5.0	ug/L	SW846 8321A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
DCAA	53	(25 - 125)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

HPLC

Client Lot #...: D3G100364 Work Order #...: FTA2V1AC-LCS Matrix.....: WATER
LCS Lot-Sample#: R3G140000-283 FTA2V1AD-LCSD
Prep Date.....: 07/14/03 Analysis Date..: 07/15/03
Prep Batch #...: 3195283 Analysis Time..: 13:38
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
2,4-D	95	(50 - 115)			SW846 8321A
	97	(50 - 115)	1.6	(0-30)	SW846 8321A
2,4,5-TP (Silvex)	96	(60 - 130)			SW846 8321A
	92	(60 - 130)	3.6	(0-30)	SW846 8321A
2,4,5-T	99	(55 - 130)			SW846 8321A
	98	(55 - 130)	1.4	(0-30)	SW846 8321A
2,4-DB	94	(55 - 120)			SW846 8321A
	90	(55 - 120)	4.1	(0-30)	SW846 8321A
Dalapon	97	(50 - 125)			SW846 8321A
	84	(50 - 125)	14	(0-30)	SW846 8321A
Dicamba	89	(45 - 115)			SW846 8321A
	87	(45 - 115)	2.3	(0-30)	SW846 8321A
Dichlorprop	100	(50 - 120)			SW846 8321A
	90	(50 - 120)	11	(0-30)	SW846 8321A
Dinoseb	97	(50 - 125)			SW846 8321A
	95	(50 - 125)	2.1	(0-30)	SW846 8321A
MCPA	95	(55 - 120)			SW846 8321A
	93	(55 - 120)	1.4	(0-30)	SW846 8321A
MCPP	96	(60 - 125)			SW846 8321A
	91	(60 - 125)	5.0	(0-30)	SW846 8321A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
DCAA	98	(25 - 125)
	82	(25 - 125)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

HPLC

Client Lot #...: D3G100364 Work Order #...: FTA2V1AC-LCS Matrix.....: WATER
LCS Lot-Sample#: R3G140000-283 FTA2V1AD-LCSD
Prep Date.....: 07/14/03 Analysis Date..: 07/15/03
Prep Batch #...: 3195283 Analysis Time..: 13:38
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
2,4-D	20.0	19.1	ug/L	95		SW846 8321A
	20.0	19.4	ug/L	97	1.6	SW846 8321A
2,4,5-TP (Silvex)	20.0	19.2	ug/L	96		SW846 8321A
	20.0	18.5	ug/L	92	3.6	SW846 8321A
2,4,5-T	20.0	19.8	ug/L	99		SW846 8321A
	20.0	19.6	ug/L	98	1.4	SW846 8321A
2,4-DB	20.0	18.8	ug/L	94		SW846 8321A
	20.0	18.1	ug/L	90	4.1	SW846 8321A
Dalapon	20.0	19.3	ug/L	97		SW846 8321A
	20.0	16.7	ug/L	84	14	SW846 8321A
Dicamba	20.0	17.8	ug/L	89		SW846 8321A
	20.0	17.4	ug/L	87	2.3	SW846 8321A
Dichlorprop	20.0	20.0	ug/L	100		SW846 8321A
	20.0	17.9	ug/L	90	11	SW846 8321A
Dinoseb	20.0	19.4	ug/L	97		SW846 8321A
	20.0	19.0	ug/L	95	2.1	SW846 8321A
MCPA	20.0	18.9	ug/L	95		SW846 8321A
	20.0	18.6	ug/L	93	1.4	SW846 8321A
MCPP	20.0	19.2	ug/L	96		SW846 8321A
	20.0	18.2	ug/L	91	5.0	SW846 8321A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
DCAA	98	(25 - 125)
	82	(25 - 125)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

METHOD BLANK REPORT

HPLC

Client Lot #...: D3G100364 Work Order #...: FTT9C1AA Matrix.....: SOLID
MB Lot-Sample #: R3G220000-571

Prep Date.....: 07/22/03 Analysis Time..: 05:25
Analysis Date..: 07/25/03 Prep Batch #...: 3203571
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
2,4-D	ND	200	ug/kg	SW846 8321A
Dalapon	ND	400	ug/kg	SW846 8321A
2,4-DB	ND	200	ug/kg	SW846 8321A
Dicamba	ND	300	ug/kg	SW846 8321A
Dichlorprop	ND	200	ug/kg	SW846 8321A
Dinoseb	ND	100	ug/kg	SW846 8321A
MCPA	ND	200	ug/kg	SW846 8321A
MCPP	ND	200	ug/kg	SW846 8321A
2,4,5-TP (Silvex)	ND	200	ug/kg	SW846 8321A
2,4,5-T	ND	200	ug/kg	SW846 8321A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
DCAA	79	(25 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

HPLC

Client Lot #...: D3G100364 Work Order #...: FTT9C1AC Matrix.....: SOLID
LCS Lot-Sample#: R3G220000-571
Prep Date.....: 07/22/03 Analysis Date..: 07/25/03
Prep Batch #...: 3203571 Analysis Time..: 05:57
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
2,4-D	88	(55 - 130)	SW846 8321A
2,4,5-TP (Silvex)	98	(55 - 135)	SW846 8321A
2,4,5-T	96	(55 - 130)	SW846 8321A
2,4-DB	87	(60 - 135)	SW846 8321A
Dalapon	96	(50 - 125)	SW846 8321A
Dicamba	85	(40 - 135)	SW846 8321A
Dichlorprop	94	(60 - 130)	SW846 8321A
Dinoseb	96	(45 - 135)	SW846 8321A
MCPA	90	(55 - 135)	SW846 8321A
MCPP	89	(60 - 135)	SW846 8321A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
DCAA	79	(25 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

HPLC

Client Lot #...: D3G100364 Work Order #...: FTT9C1AC Matrix.....: SOLID
LCS Lot-Sample#: R3G220000-571
Prep Date.....: 07/22/03 Analysis Date..: 07/25/03
Prep Batch #...: 3203571 Analysis Time..: 05:57
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
2,4-D	100	87.8	ug/kg	88	SW846 8321A
2,4,5-TP (Silvex)	100	97.7	ug/kg	98	SW846 8321A
2,4,5-T	100	95.7	ug/kg	96	SW846 8321A
2,4-DB	100	87.3	ug/kg	87	SW846 8321A
Dalapon	100	96.1	ug/kg	96	SW846 8321A
Dicamba	100	84.8	ug/kg	85	SW846 8321A
Dichlorprop	100	94.2	ug/kg	94	SW846 8321A
Dinoseb	100	95.6	ug/kg	96	SW846 8321A
MCPA	100	89.8	ug/kg	90	SW846 8321A
MCPP	100	89.5	ug/kg	89	SW846 8321A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
DCAA	79	(25 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

HPLC

Client Lot #...: D3G100364 Work Order #...: FR3Q71AJ-MS Matrix.....: SO
MS Lot-Sample #: D3G100364-001 FR3Q71AK-MSD
Date Sampled...: 07/08/03 10:50 Date Received..: 07/10/03
Prep Date.....: 07/22/03 Analysis Date..: 07/25/03
Prep Batch #...: 3203571 Analysis Time..: 07:01
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
2,4-D	98	(55 - 130)			SW846 8321A
	86	(55 - 130)	13	(0-50)	SW846 8321A
2,4,5-TP (Silvex)	122	(55 - 135)			SW846 8321A
	135	(55 - 135)	11	(0-50)	SW846 8321A
2,4,5-T	107	(55 - 130)			SW846 8321A
	96	(55 - 130)	11	(0-50)	SW846 8321A
2,4-DB	103	(60 - 135)			SW846 8321A
	98	(60 - 135)	5.0	(0-50)	SW846 8321A
Dalapon	102	(50 - 125)			SW846 8321A
	85	(50 - 125)	17	(0-50)	SW846 8321A
Dicamba	95	(40 - 135)			SW846 8321A
	81	(40 - 135)	16	(0-50)	SW846 8321A
Dichlorprop	121	(60 - 130)			SW846 8321A
	108	(60 - 130)	11	(0-50)	SW846 8321A
Dinoseb	106	(45 - 135)			SW846 8321A
	92	(45 - 135)	14	(0-50)	SW846 8321A
MCPA	103	(55 - 135)			SW846 8321A
	92	(55 - 135)	11	(0-50)	SW846 8321A
MCPP	123	(60 - 135)			SW846 8321A
	109	(60 - 135)	12	(0-50)	SW846 8321A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
DCAA	109	(25 - 140)
	106	(25 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight

MATRIX SPIKE SAMPLE DATA REPORT

HPLC

Client Lot #...: D3G100364 Work Order #...: FR3Q71AJ-MS Matrix.....: SO
MS Lot-Sample #: D3G100364-001 FR3Q71AK-MSD
Date Sampled...: 07/08/03 10:50 Date Received..: 07/10/03
Prep Date.....: 07/22/03 Analysis Date..: 07/25/03
Prep Batch #...: 3203571 Analysis Time..: 07:01
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
2,4-D	ND	109	107	ug/kg	98		SW846 8321A
	ND	109	94.3	ug/kg	86	13	SW846 8321A
2,4,5-TP (Silvex)	ND	109	133	ug/kg	122		SW846 8321A
	ND	109	148	ug/kg	135	11	SW846 8321A
2,4,5-T	ND	109	117	ug/kg	107		SW846 8321A
	ND	109	105	ug/kg	96	11	SW846 8321A
2,4-DB	ND	109	113	ug/kg	103		SW846 8321A
	ND	109	107	ug/kg	98	5.0	SW846 8321A
Dalapon	ND	109	111	ug/kg	102		SW846 8321A
	ND	109	93.4	ug/kg	85	17	SW846 8321A
Dicamba	2.3	109	107	ug/kg	95		SW846 8321A
	2.3	109	91.3	ug/kg	81	16	SW846 8321A
Dichlorprop	ND	109	132	ug/kg	121		SW846 8321A
	ND	109	118	ug/kg	108	11	SW846 8321A
Dinoseb	ND	109	115	ug/kg	106		SW846 8321A
	ND	109	100	ug/kg	92	14	SW846 8321A
MCPA	ND	109	112	ug/kg	103		SW846 8321A
	ND	109	101	ug/kg	92	11	SW846 8321A
MCPP	ND	109	134	ug/kg	123		SW846 8321A
	ND	109	119	ug/kg	109	12	SW846 8321A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
DCAA	109	(25 - 140)
	106	(25 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.

3033 Campus Drive North, Suite 290, Minneapolis, Minnesota 55441

July 3, 2003

Mr. Mark Mercier
Technical Manager
Attn: CENWO-PM-HC (Mercier)
106 South 15th Street
Omaha, Nebraska 68102-1618

Subject: **Contract DACW45-94-D-0001, DO-49**
Ellsworth AFB, South Dakota
Railroad Track Soil Sample Collection
Serial Letter 1-49-RD-304

Dear Mr. Mercier:

Telephone
763.551.1001
Facsimile
763.551.2499

This letter supercedes our letter 1-49-RD-303, dated July 1, 2003. This letter adds some pesticide sampling to the program proposed in the original letter.

Lt. Shirey has requested that we collect soil samples from the railroad tracks at Ellsworth Air Force Base. The purpose of the sampling is to determine whether soils under these tracks will require any special handling/disposal procedures when the tracks are removed. This letter contains our sampling plan for this work.

Ellsworth Air Force Base has approximately 6.0 miles of track. In addition, two railroad spurs and three loading areas have been identified. The three loading areas are:

- Fuels Area C spur: Located at the south end of the flightline at Fuels Area C. Assumed to have been used in the past for unloading fuel from rail cars.
- South Loading Area: End of spur located at Supply Building. Materials managed at this site are unknown.
- North Loading Area: Located at the northern terminus of the track, near the Firing Range. Materials managed at this site are unknown.

Contaminants of concern for the railroad track include creosote, which is a common preservative for the wooden ties, pesticides, and herbicides, which could have been used to control weeds along the track. Additional analyses are suggested at the loading docks since material handling in these areas could have produced spills.

Soil sampling directly under the track is not considered feasible due to the presence of rock ballast. Therefore, the soil samples will be collected as close as possible to the track adjacent to the rock ballast. The soil samples will be collected at a depth of approximately

3 to 6 inches. Soil samples will be collected at this depth since volatilization and degradation due to sunlight can occur at the soil surface.

Table 1 indicates the sample analysis and methods for each sampling area.

TABLE 1

SAMPLE ANALYSIS

Contaminant	Analyte (EPA Method)	Area sampled
Herbicides	Herbicides (8321)	Track samples
Pesticides	Pesticides (8141 & 8081)	Track samples
Creosote	SVOCs (8270)	Track samples
Fuels	VOCs w/ naphthalene (8260) and DRO (8015M)	Fuel Loading Area
Undefined Spill	VOCs with naphthalene (8260), SVOCs (8270), and RCRA metals (6010/7471)	Supply Building and Loading Dock Areas

SVOCs = Semivolatile organic compounds.
VOCs = Volatile organic compounds.

In order to characterize the soil conditions with respect to the use of herbicides, pesticides, and wood treatment, four soil samples will be collected along themain line at approximately equal distances. This will result in the collection of one sample at intervals of approximately 1.5 miles.

Two additional samples will be collected at each of the loading areas. These samples will be determined at the discretion of the sample technician. The first priority will be to collect the samples in areas where evidence of a spill is present (i.e., stressed vegetation or stained soil). If no evidence of a spill is present, the samples will be collected from areas most likely to be impacted by a spill. The most likely impacted area would be adjacent to the track, between the track and the loading dock.

Each sample shipment will include a trip blank for samples analyzed for VOCs. Additionally, one equipment blank will be collected for all analytes. The equipment blank will be collected by running distilled water over a decontaminated sampling trowel. A summary of the samples is included in Table 2.

TABLE 2

SAMPLE ANALYSIS

Location	Sample Identifier	Analysis				
		Herbicides/ Pesticides	VOCs	SVOCs	DRO	RCRA Metals
Track	SS03TK01 through SS03TK04	X		X		
Fuels Area C	SS03FL01 through SS03FL2		X		X	
North and South Loading Areas	SS03LD01 through SS03LD04		X	X	X	X
Equipment Blank	Eqpt Blk	X	X	X	X	X
Trip Blank	As required (one per cooler)		X			

All organic samples will be preserved with ice and shipped under Chain-of-Custody protocol.

Please feel free to contact me at (763) 551-2401 with any questions or comments you may have.

Very truly yours,

Earth Tech, Inc.

Keith J. Anderson, P.E.
Project Manager

cc Lt. Nathan Shirey, EAFB
Joe Odegaard
Craig Larson

file: 52331/15.1010 L:\WORK\TERC\52331_49\WP\DO49 SERIAL LETTERS\49RD304.DOC